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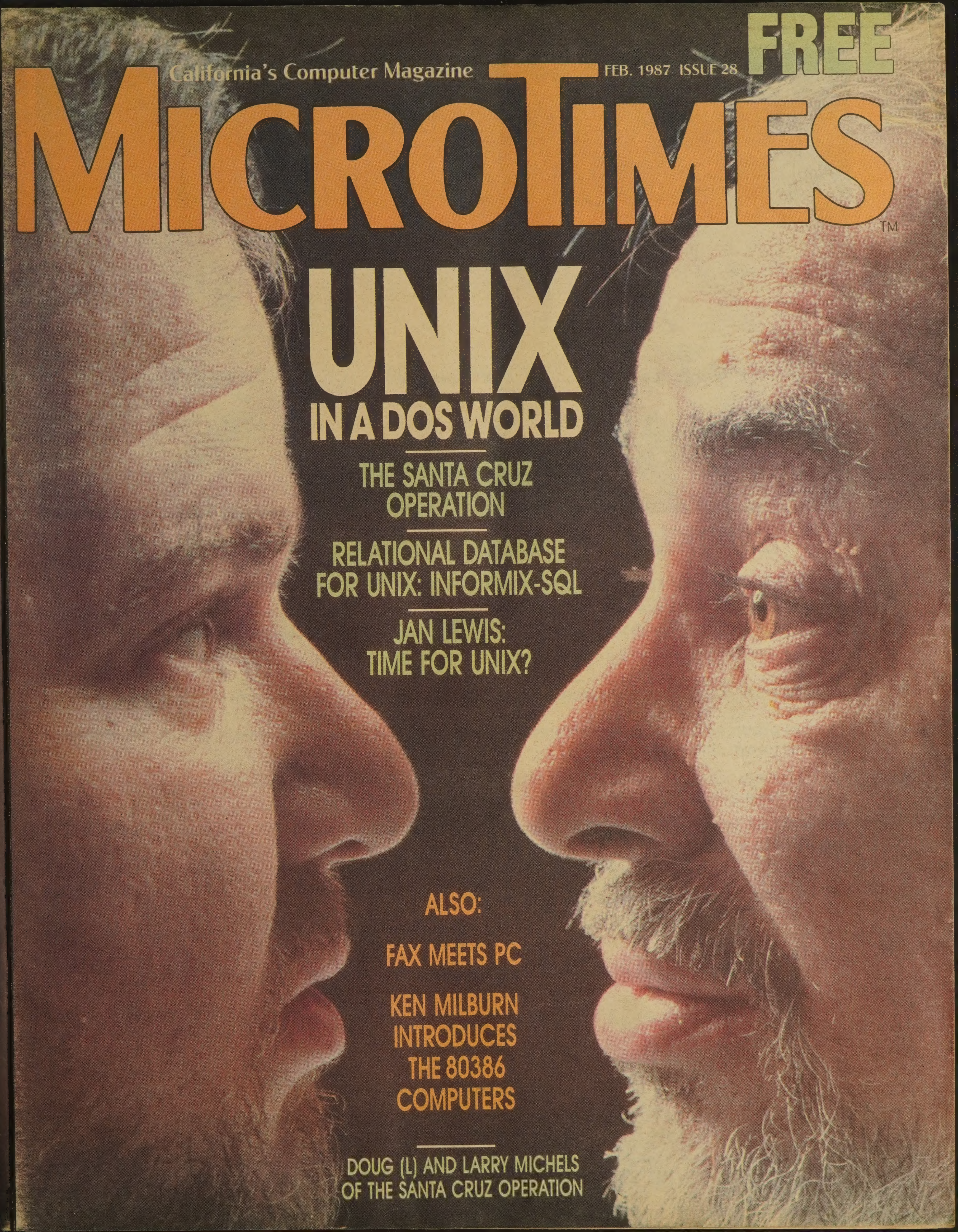


UNIX IN A DOS WORLD

THE SANTA CRUZ OPERATION

RELATIONAL DATABASE FOR UNIX: INFORMIX-SQL

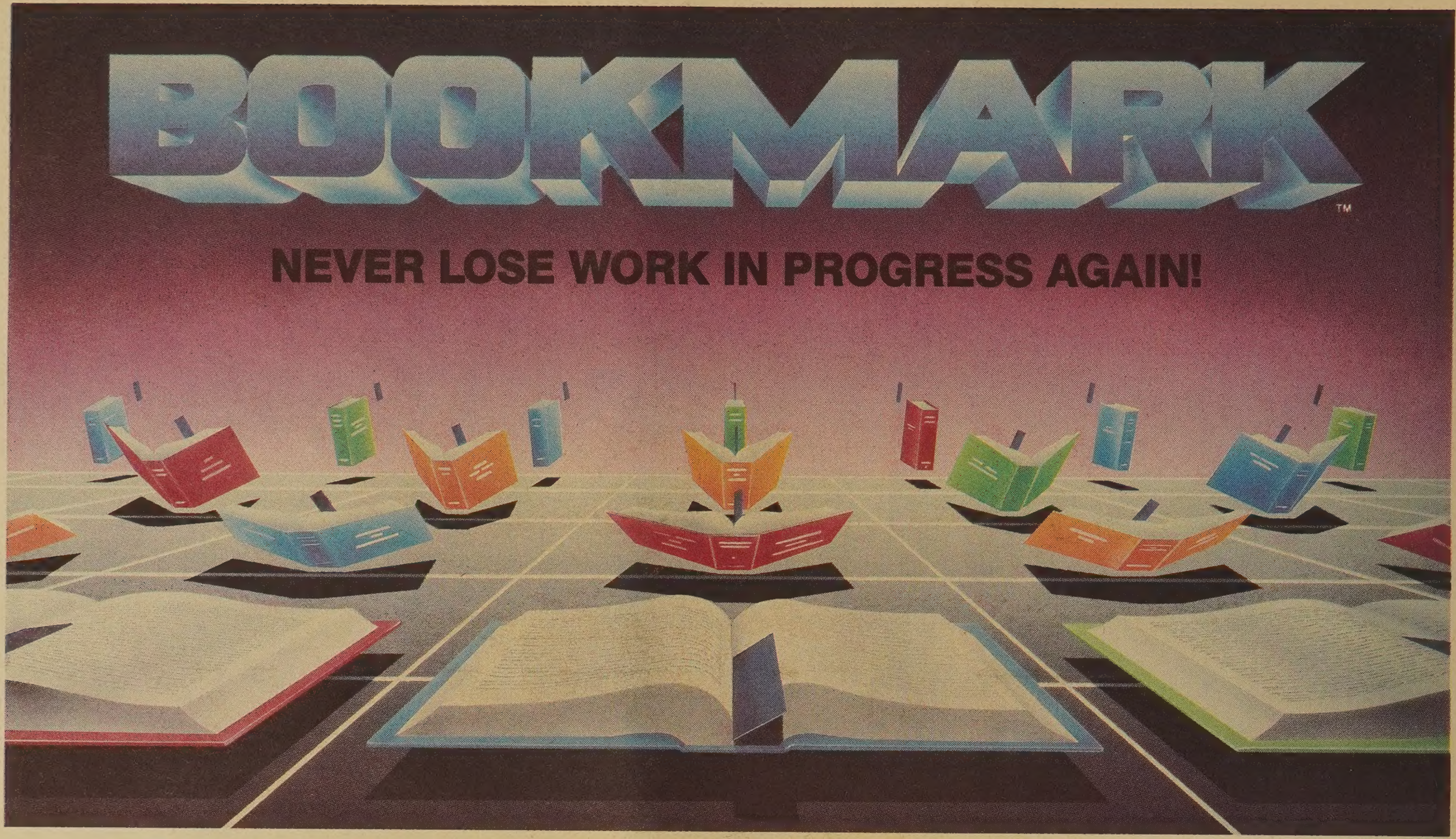
JAN LEWIS: TIME FOR UNIX?

ALSO:

FAX MEETS PC

KEN MILBURN INTRODUCES THE 80386 COMPUTERS

DOUG (L) AND LARRY MICHELS OF THE SANTA CRUZ OPERATION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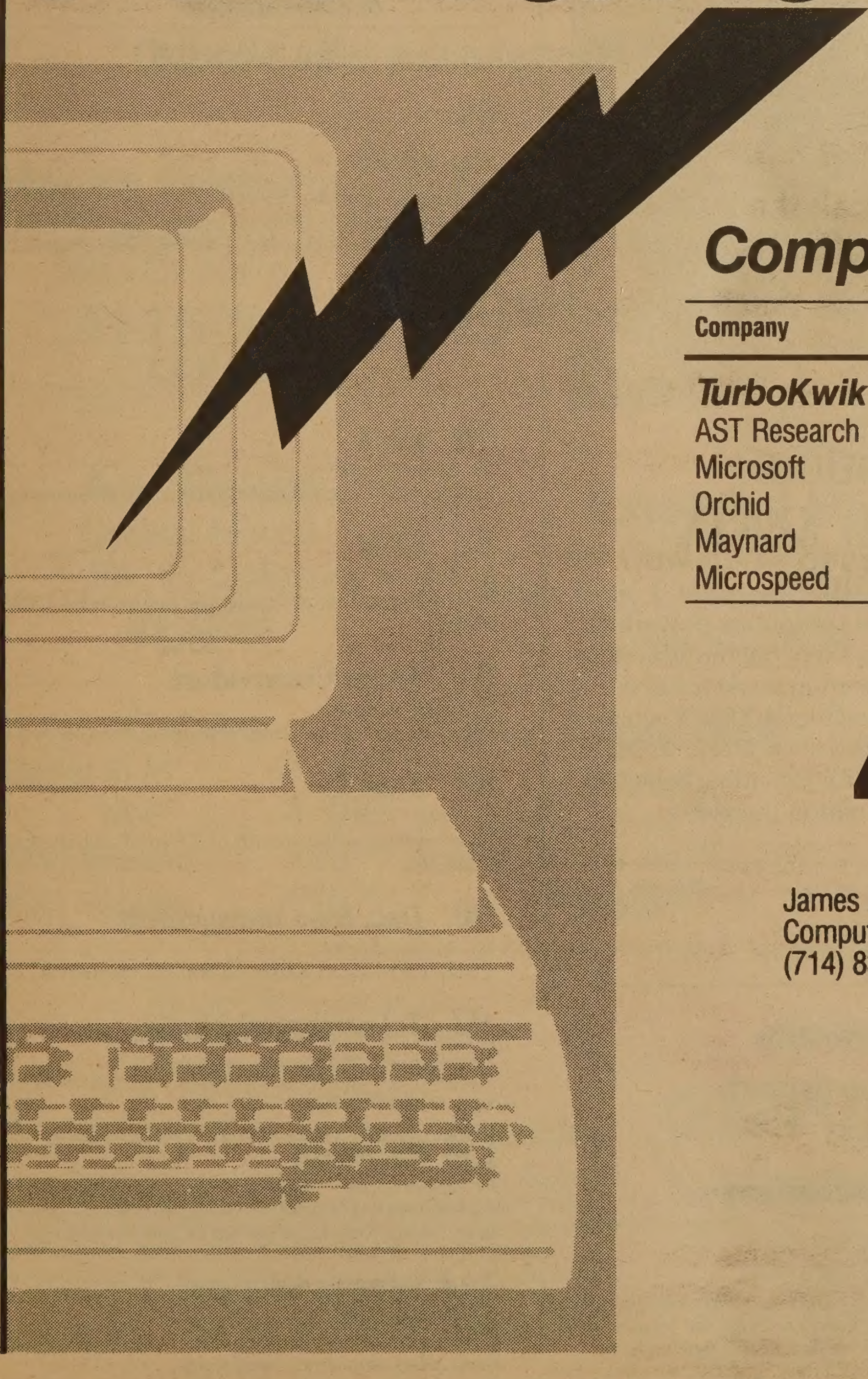

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COVER STORY

COVER AND CONTENTS PHOTOS: MARC FRANKLIN

46 The Santa Cruz Operation: Taking Care Of Business With XENIX

By Bennett Falk and Mary Eisenhart

With the advent of the 80386-based micros and other personal computers powerful enough to handle true multi-user, multi-tasking applications, the UNIX operating system is coming into its own in the business world. The Santa Cruz Operation markets XENIX, Microsoft's licensed value-added version of UNIX, and has developed XENIX workalikes for the most popular DOS-based applications. In this month's cover story, SCO founders Larry and Doug Michels explain the company's strategy for providing business solutions — which may be based on DOS, XENIX, or a combination thereof.

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UNIX is a serious contender in the business world as the only currently available operating system that effectively uses the power of the new 32-bit micros — but is the business world ready for **!chmod go + wx/uh/31/maddog/unixvs*.compars.readme**?

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By Aubrey Pilgrim

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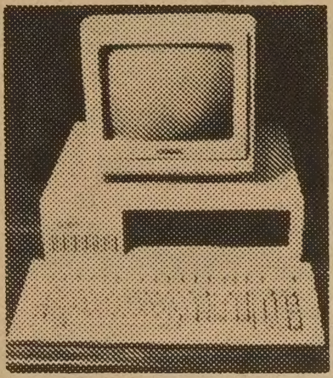

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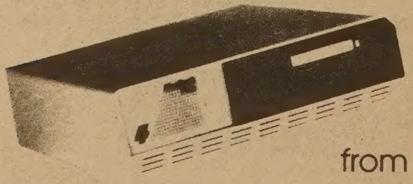

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For over two years I have posted an events calendar on our club board with an encouragement to our members to read *MicroTimes*. In real life I am a full-time college/university computer instructor and have encouraged my students to read *MicroTimes*. We have, many times, discussed articles written in your fine publication. Thanks again and keep up the fine work — you are appreciated!

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Keeping Up With The Locals

I want to personally congratulate you on the editorial content and the advertisements contained in *MicroTimes*. As a Lockheed Data Systems Architect it is necessary for me to keep up with prices, quality, and hints on using a multitude of microcomputer related products. Your publication certainly helps meet this need. The fact that it is free makes it all the more delightful. You are approaching the quality of much more expensive PC related publications, and your information on local vendors and prices is especially welcome.

Thomas B. Roach
Sunnyvale

In Search Of The Lost Mirage

We are trying to locate a company (or its successor) called Mirage Concepts. They used to publish a word processor titled "Express," and were based out of Fresno, we are told. If you or any of your readers can put us in touch with them we would surely appreciate it.

Failing that, we are in need of a rudimentary word processor (IBM) that we may incorporate into an application we've developed. Again, if you or any of your readers . . .

K. Stephan Larsen
Englewood, Colorado

If you have any light to shed on this matter, please write or call Mr. Larsen at Larsen Cotton Inc., 7445 E. Peakview Ave., Englewood, CO 80111, (303) 220-9050. Thanks. —eds.

Another Recruit

After reading much about PCs and their rapid development through the traditional publications and columns from daily newspapers, I thought I had enough bytes in my memory to get my system. I tinkered with it and after a month was able to produce my first document as an apprentice desktop publisher. Smugly I thought, I'm computer literate.

Then yesterday I noticed *MicroTimes*. I picked one up and was amazed at how much I have been missing by way of compuinfo. I've been reading *Computer Currents*, *PC World*, and a lot of other high-class sounding and slick looking pubs, but nothing comes close to *MicroTimes*. How on earth I survived is another story. For now, I am reading my copy from page to page and am looking forward to my next ish. Please enlist me as a MicroTimer.

Chris R. Aranda
San Francisco

Letters are heartily encouraged. Send electronic mail to **microx** *on The WELL, (415) 332-6106. Send US Mail to 5951 Canning Street, Oakland, CA 94609. Please include your real name and the city where you live. Anonymous letters will not be printed.*

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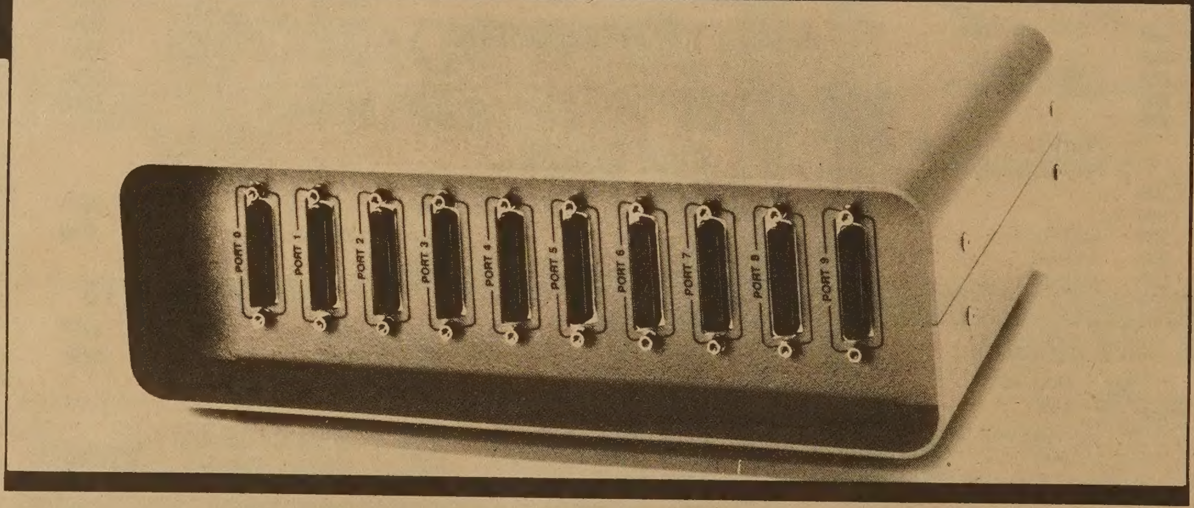

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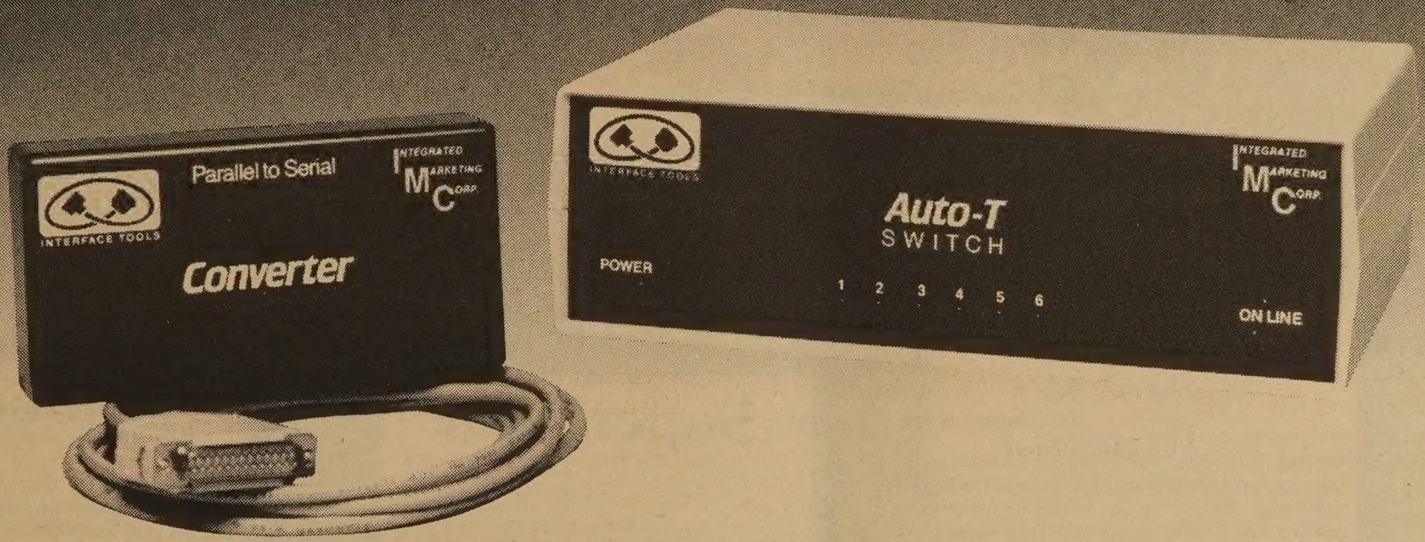

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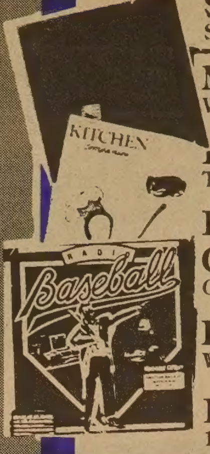

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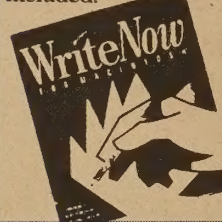

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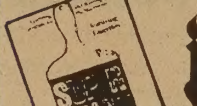

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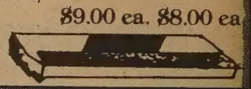

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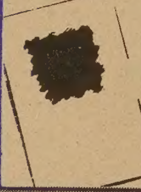

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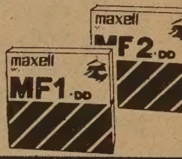

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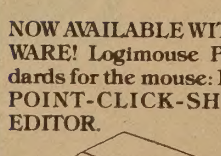

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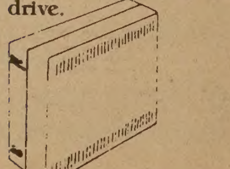

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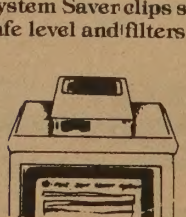

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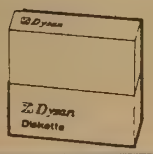

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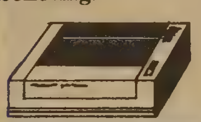

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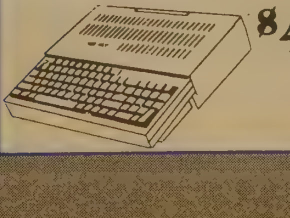

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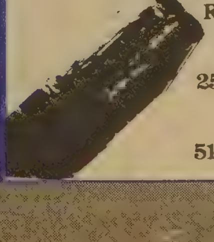

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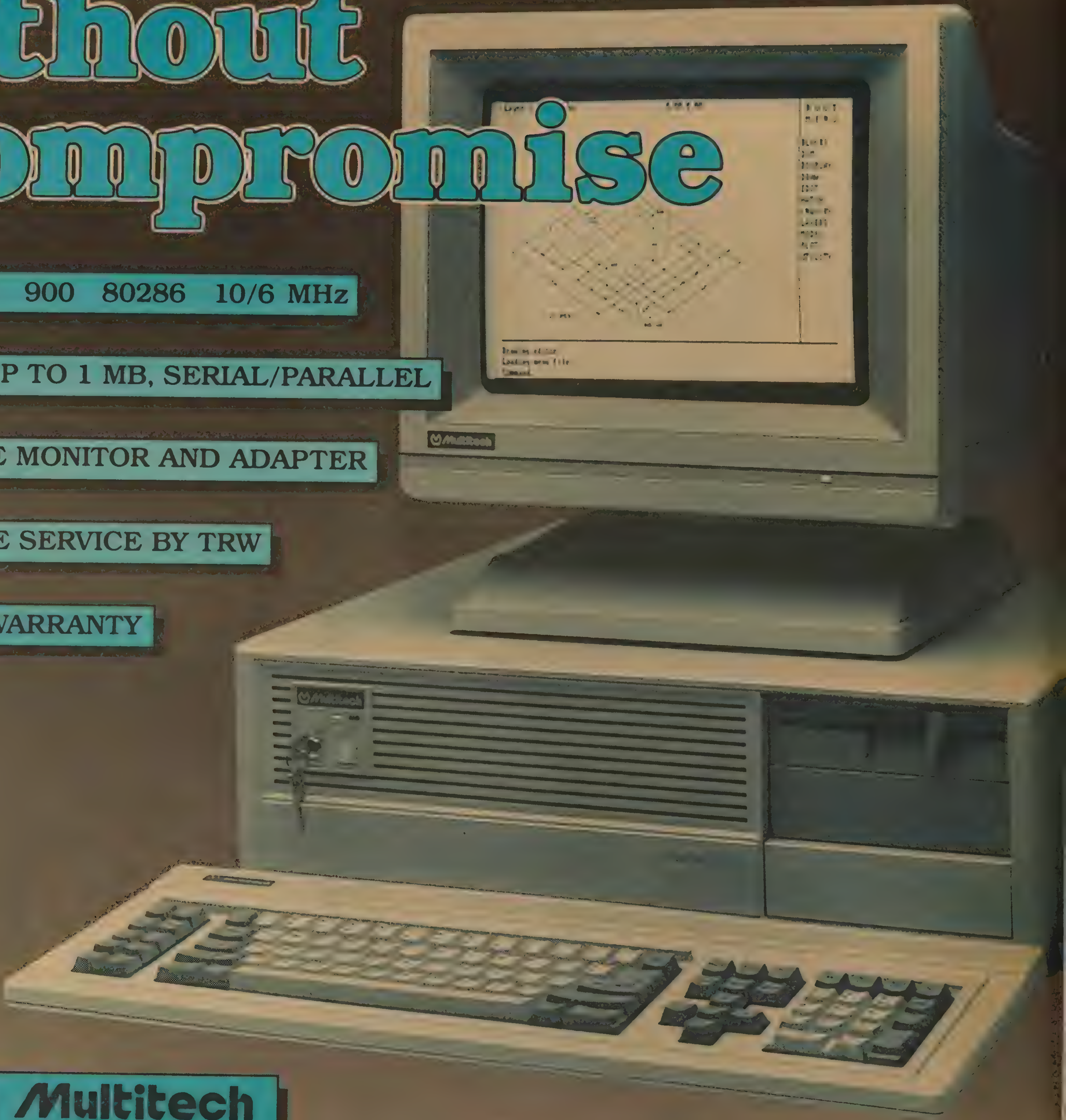

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January-March Computer Classes. Sponsored by the Industry Education Council of Santa Clara County. Various subjects, times and locations. Call (408) 971-6220 for information.

Through June 1987 Little House Computer Classes. Many times and subjects available. Call (415) 326-2025 for information.

January 24 Desktop Publishing Seminar. Sponsored by Center for Higher Education, San Ramon. Call (415) 866-1822 for information.

January 27 Law Office Automation: The Good, The Bad, and The Awful. Seminar sponsored by AT&T Information Systems and Deets & Associates. AT&T Conference Center, San Francisco. Call (415) 863-9500 for information.

January 28-31 Seybold Conference On Desktop Communications. Hyatt Regency, San Francisco. Call Andrew Seybold (213) 320-9151 or Thomas White (408) 297-0888 for information.

January 31 North-West Computer Swap. The Concourse, 8th and Brannan, San Francisco. Call Computer Swap, (800) 252-SWAP for information.

January 31 Putting Modern Technology Into Genealogy. Sacramento. Seminar sponsored by ComputerRooters. Call (916) 961-4741 for information.

January 31 Desktop Publishing Seminar. Sponsored by Center for Higher Education, San Ramon. Call (415) 866-1822 for information.

January 31 Desktop Publishing Seminar. San Francisco. Sponsored by McLean and Associates. Call (415) 795-0527 for information.

January 31 Vallejo Computer Show. Solano County Fairgrounds. Sponsored by Golden Gate Shows and MicroTimes. Call (415) 388-8893 for information.

January 31-February 1 Computer Supermarket Show and Sale. Brooks Hall, San Francisco. Call Microshows, (415) 340-9114 for information.

February 3-6 "Computer and Communications Security." Palo Alto. Class sponsored by Integrated Computer Systems. Call (800) 421-8166 for information.

February 7 Publishing Seminar For Software Developers. Dunfey Hotel, San Mateo. Sponsored by Software Entrepreneurs' Forum and Software Publishing Association. Call (415) 854-7219 for information.

February 7-8 Computer Supermarket Show and Sale. Santa Clara Convention Center. Call Microshows, (415) 340-9114 for information.

February 14 Pleasanton Computer Show. Alameda County Fairgrounds. Sponsored by Golden Gate Shows and MicroTimes. Call (415) 388-8893 for information.

February 15-17 Kaypro Cup National Dealers Meeting and Trade Show. San Diego. Call Kaypro, (619) 481-4300 for information.

February 20 The Commodore Show. Brooks Hall/Civic Center, San Francisco. Call Computer Swap, (800) 252-SWAP for information.

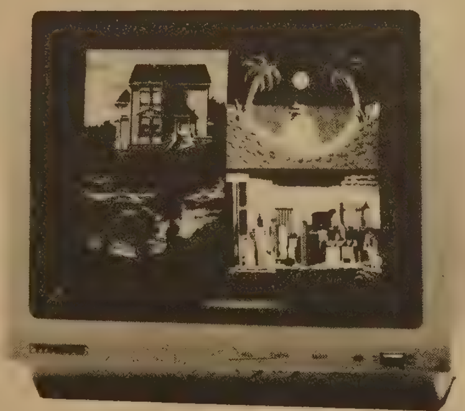
February 21 Bay Area Computer Swap. Cow Palace, San Francisco. Call Microshows, (415) 340-9114 for information.

February 24-27 "Digital Image Processing." Palo Alto. Class sponsored by Integrated Computer Systems. Call (800) 421-8166 for information.

February 28 San Francisco Computer Show. The Pacific Center, 22 Fourth St., San Francisco. Sponsored by Golden Gate Shows and MicroTimes. Call (415) 388-8893 for information.

As a community service, MicroTimes lists trade shows, seminars, and other special events in the Calendar of Events free of charge on a space-available basis. To improve the likelihood of your listing's timely inclusion, please make sure we have the necessary information no later than the first of the month preceding the month of the issue in which you'd like it to appear (i.e. the deadline for the December issue is November 1). Send to: MicroTimes Calendar of Events, 5951 Canning St., Oakland, CA 94609.

News about user group meetings and other regularly scheduled activities should be sent to User Group Network at the same address.



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BUT JAN LEWIS SAYS . . .

In This Corner – UNIX

Statement: The time is right for UNIX to break out from the limits of university and engineering applications into mainstream microprocessing.

Question: Is this statement from 1981? 1986? or 1992? Like many of the great market factors, UNIX has found a niche, but has not succeeded in the mainstream. Is the market finally ready for UNIX to drop down into the MS-DOS world and transform our stand-alone computers ?

Through the magic of the silicon wizards, what was standard for mini and mainframes is ready for the desktop. Unfortunately, DOS is not.

As the user community becomes more sophisticated, the desire is growing for the "multis": MultiMIPs, multitasking, multiuser, multisite networking and multiple file service. But many of DOS' virtues — its "relative" simplicity, adaptability and minimum drain on micro resources — are also its weaknesses. Furthermore, efforts to fit these multi-square pegs into DOS' round hole have been slow and frustrating.

Now, through the magic of the silicon wizards, what was standard for mini and mainframes is ready for the desktop. Unfortunately, DOS is not. And for the "multis" to become pervasive, the industry needs a standard operating system.

Right now, UNIX is the main contender for that standard. For all the bitching and moaning and grumbling about UNIX, it has many virtues: it works; it has a large base of applications and programmers; and it is supported by many different companies for very different hardware. Its vices are also impressive: it takes mountains of storage and processing, and is not oriented to commercial-type applications.

But probably the most oppressing and depressing fact is the UNIX concept of "user friendly." Hard-to-learn-but-user-friendly is a contradiction in terms. The issue for UNIX is not how user friendly it is—but how user hostile. `!chmod go+wx /uh/31/maddog/ unixvs*.compars.readme` may be powerful, but not friendly. And UNIX is not only hard to learn, it is even hard to relearn. With UNIX, I fear there are users who take too long a coffee break and have to retrain. Not everyone spends eight hours a day squinting at a monitor. Casual users, who constitute a majority of business users, must be able to retain fluency without being forced to relearn the grammar each time they sign on.

As each new version of DOS begins to look more like UNIX, walk more like UNIX and quack more like UNIX, we can only hope the best of both will prevail.

As the "Keeper of the DOS," Microsoft is also a contender for the "multi" standard. It already is deep into UNIX, through Xenix. And more and more, MS-DOS and UNIX are merging in structure and functionality. As each new version of DOS begins to look more like UNIX, walk more like UNIX and quack more like UNIX, we can only hope the best of both prevail. (Can you imagine the worst of both worlds — the user friendliness of UNIX with the resource management of DOS?)

In contrast to Microsoft moving up from the PCs, IBM, the third contender, can move down from the 370 to scoop up and interconnect the standalones. The very nature of the multis requires sharing resources and access. Simple security, which is largely ignored by micro users short of locking their floppies in a file cabinet, is a major headache for shared systems.

While large multi-user or interconnected systems are new territory for companies that grew up on micros like Microsoft, IBM has built its success on the backbone of centralized control and administration. Its history and account control philosophy give it a natural edge in support of multi-user, multi-resource computer applications. The microprocessor moved the computer user away from centralized control. The new generation could move the user back. All this new found silicon power has not been accompanied by more support and systems management power. And the micro industry has been slow to develop the infrastructure that is common in the mini and mainframe world. Linking users together to share files requires equal amounts of technology and management. Much of the silicon opportunity will be wasted if silicon power is mistaken for systems power. ☐

The Pros And Cons Of Slide Presentations

There are always lots of hot new trends in the high tech fast lane: some of them travel well, others crash and burn. But outside the fast lane, plenty of traffic travels in solid but undramatic applications — applications like presentation graphics.

Like PC spreadsheets, presentation packages can turn good professionals into systems operators.

Personal computers preparing slides and overheads show how PCs can enter and open a market by expanding user access. But they also show the limits of a niche market and how technology can create and later shift opportunity.

General Parametrics (which markets Videoshow) has been able to succeed because it replaces existing, expensive equipment and processes with lower cost and commonplace PC hardware. But just as General Parametrics was able to take sales away from other vendors, it also is vulnerable to changes in technology. New advances, like the TI and Intel graphics chips, could impact vendors like General Parametrics. In addition, there is an opportunity for other vendors to link desktop publishing and advanced graphics to presentation graphics output.

Granted, for many presentations, visuals are a must for keeping the audience's attention and making a good impression. But, despite claims to the contrary, slides are not right for every presentation. Even if the equipment is available, there are times when overheads are just fine.

While slides can be impressive, they connote a one-way, formal presentation. They are cold and non-interactive: You can't write on the screen to underline a point or add a comment. Because slides are a read-only medium, they discourage the audience from breaking in with questions.

In contrast, overheads are hot and interactive. They actually encourage audience participation. You can write on them as you go, drawing arrows and underlines. Room lights are up so the audience become participants. Overheads can also be made at the last minute. How often has a secretary received a bunch of scribbled notes to quickly type onto overheads five minutes before the presentation? You just can't do that with slides. Slide production is still a function of the "graphics" person, whether in a remote department or as a designated "slider" within the group. Like PC spreadsheets, presentation packages can turn good professionals into systems operators.

Once everyone in the office can turn out quality slides like tortillas, what is their true value?

Much of the current presentation graphics technology really moved the production out of a remote department, but it still is not really "personal" production. The user interfaces on presentation graphics software are slow and the formats are quite rigid. Videoshow's Baskin may offer his 31 flavors of charts and tables, but everyone wants to make "just a little change."

What happens when you move a function from the complex and arcane to the simple and open? Is it like butter? The more you spread it around the thinner it becomes? A good analogy might be the impact of word processing. Remember when you received a personalized letter in proportional spaced printing, you assumed it really was personal? Now whenever you receive a "personalized" letter (You may already be a winner, Ms. Occupant!) you know it is done by a machine and most impersonal.

Once everyone in the office can turn out quality slides like tortillas, what is their true value? For the truly artistic this may be a boon, but for many others it may hide poor ideas and embarrassing data in pretty packages. Slides may have the sizzle, but they don't guarantee the quality of the steak. ☐

Jan Lewis is a well-known industry analyst and president of the Palo Alto Research Group, a consulting firm for the microcomputer industry. This article has been reprinted with permission from Computer Insider, PARG's newsletter.

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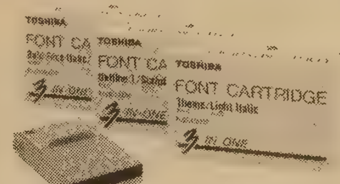

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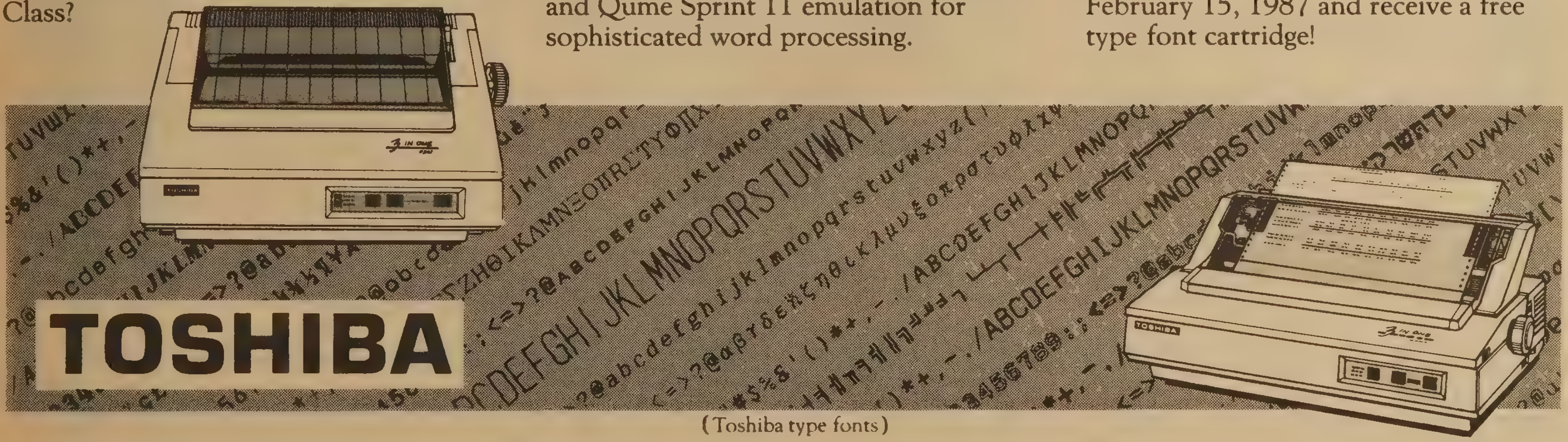

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Industry News

By Hartley Lesser and Patricia Lesser

More Postscript Support

Adobe Systems Inc. (Palo Alto, CA) has announced that the Diconix, ITT Qume and NEC Information Systems now support the PostScript page description language. The new PostScript compatible inkjet printer announced by Diconix is the first printer capable of automatic duplex printing. Qume will incorporate PostScript into its Qume ScripTEN printer, and NEC will do likewise with the SilentWriter LC-890.

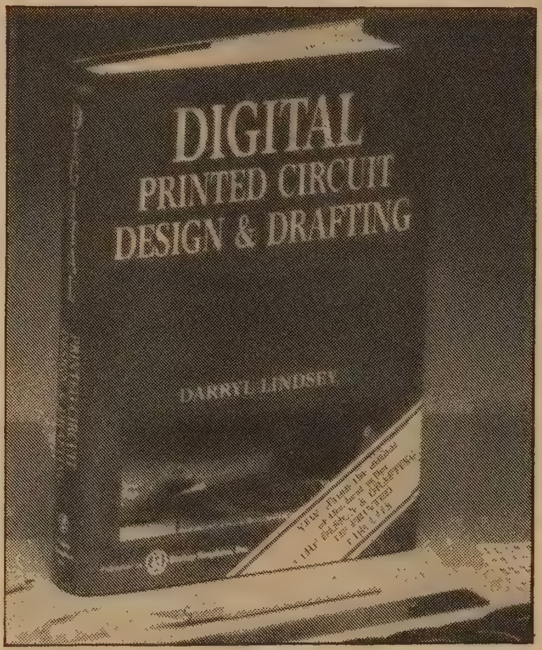
DP Via Telecomm

Alphabet Soup Inc. (San Francisco, CA) has announced a new telecommunications service called DesigNet for electronic publishing and CAD marketplaces. Users of this service can send their electronic files via modem for typesetting laser printing and plotting. Libraries of ready-to-use graphics, type fonts, software and support services will also be available.

Posner Leaves A-T, Goes To Ansa Ansa

Software (Belmont, CA) has named Ronald S. Posner as the company's new president and CEO. Posner, who recently resigned from Ashton-Tate, succeeds Steve Dow, who will become vice chairman of the board at Ansa.

Hartley and Patricia Lesser are veterans of computer publishing, having published over 500 feature articles and reviews in computer magazines worldwide and assisted in founding four national computer publications, including inCider. *They have also worked at* PC World, *Softalk Publishing, and several other publications, and founded two online computing magazines,* MicroToday *and* Corporate Computing. *They currently publish and edit* Computing Today! *a weekly computer magazine on the GEnie personal network and the NewsNet business network. They can be reached at (415) 828-1528.*



A new kit from Bishop Graphics offers a learn-by-doing approach to circuit board design and drafting.

Learn-By-Doing Drafting Kit

Bishop Graphics (818/991-2600) has announced a complete "learn-by-doing" kit for beginners and professionals seeking to develop or advance their skills in digital printed circuit board design and drafting. The combination package consists of a 432-page hardcover text and a companion kit of over 480 professional Bishop Graphics design and drafting aids for doing the actual PCB artwork exercises in the text. The Digital Printed Circuit Design And Drafting combination text and drafting kit is available for $99.

Vertical Marketing Association

After a meeting of its supporters and the members of its Board of Advisors during COMDEX/Fall, the Association of Vertical Market Computing has announced its official formation. This worldwide association is devoted to the interests of companies and individuals involved in the many vertical markets within the microcomputer industry. Call 714/676-9549 for more information.

News From Autodesk

Autodesk, Inc. (Sausalito, CA) has turned over the reins of control to former CFO Alvar Green, now executive vice president. Co-founder John Walker will retain his title as chairman of the board. The company has also announced that *AutoCAD* is now fully compatible with the Compaq Deskpro 286.

Another Borland Acquisition

Borland International (Scotts Valley, CA) has acquired *ClickOn Worksheet*, a Mac spreadsheet software program, from T/Maker Company.

CMS Signs OEM Agreement

CMS (Costa Mesa, CA) has signed an OEM purchase agreement with Cipher Data Products, Inc., valued at $5 million in its first year. This agreement establishes a two-year contract under which CMS will purchase Cipher's 1/4" and 1/2" tape drives and subsystems for use in CMS mass storage products.

Cordata Adopts DDL

Cordata Technologies (Thousand Oaks, CA) will adopt Imagen's DDL document description language for its Intellipress turnkey desktop publishing system. The company has also signed a bundling agreement with Aldus Corp., allowing Cordata to bundle *PageMaker* software with its turnkey desktop publishing system.

Nominations Invited For Fluegelman Award

PCW Communications invites nominations for the first annual Andrew Fluegelman Award, which will honor a programmer or group of programmers who has made a significant contribution to the software fields. A cash prize of $5000 will be presented to the winner in March.

Says David Bunnell, chairman of PCW Communications and the late Mr. Fluegelman's colleague at *PC World* and *Macworld*, "This award will highlight the software industry's pursuit of excellence, and also bestows a special accolade on a programmer whose work reflects the spirit and high standards that Andrew had set." Any commercial, shareware or public domain personal computer software developed by an individual or team is eligible; anyone who did not participate in developing the software may submit a nomination. While companies are encouraged to nominate software which they market, it should be noted that the nomination should be for individuals, not companies.

The software will be judged by these criteria: it advances the state of the art of personal computing, manifests innovation in concept and design, and demonstrates orientation to personal computer users. Any software released between January 1, 1983 and December 31, 1986, may be nominated. This year's judges, who will evaluate ten finalists chosen by a screening committee, are Daniel Bricklin of Software Garden, Harry Miller, editor of *PC World*, Jerry Schneider of the Capitol PC User Group, Bob Wallace of Quicksoft, and Camilo Wilson of Lifetree Software.

The award's cash prize is drawn from the Andrew Fluegelman Fund, which was established after Fluegelman's death in 1985 to commemorate his contributions to the software field. Fluegelman wrote the popular PC-based telecommunications program *PC-Talk* and devised the innovative system he called "freeware" to market it.

Nominations must be postmarked no later than February 1, 1987. To obtain nomination forms, write to Andrew Fluegelman Award, PCW Communications, Inc., 501 Second Street, Suite 600, San Francisco, CA 94107, or call Shirley Gines at (415) 546-7722.

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On The Firing Line

Connectivity—Problems And Solutions

By Stephan Wickham
and the Diamond Software Technical Team

More and more of our corporate customers are working with problems involving connectivity. Micro-to-mainframe communications and networks have become the current rage, and activity in these areas has increased enormously in the last few months. Many new products and services to support a wide variety of equipment connection configurations are arriving on the market. It is becoming increasingly evident that specialized expertise is required in order to achieve a high degree of success in these areas. The complexity of many connectivity setups requires the cooperation of several people with knowledge in different areas. This month we'll look at some connectivity products and point out some of the more common problems in networking PCs.

BOEING CALC NETWORK

Boeing Computer Services has released a network version of its *Lotus 1-2-3*-compatible jumbo spreadsheet **Boeing Calc**. This is the first "Lotus-like" networking spreadsheet on the market, and we've found it to be a well designed implementation. *Boeing Calc Network* uses a three-dimensional spreadsheet space (work area) with a height of 16000 cells, width of 16000 cells and the ability to stack 16000 interlinked spreadsheet pages. It can perform cell-to-cell direct addressing, even across pages—a more powerful feature than the spreadsheet consolidation feature in *Lotus 1-2-3*. Anyone who has used *1-2-3* knows that when pages are combined with an external consolidation, data must be laid out in a mirror-order fashion. *Boeing Calc* does not require that the pages all look the same, so it allows a great deal of flexibility as to how the data can be arranged throughout the spreadsheet.

Large business organizations, governments, scientific and engineering groups use *Boeing Calc* for consolidation summaries and analysis. With *Boeing Calc*'s Local Area Network version, spreadsheets from separate outside files can be brought into a master file, with each spreadsheet possibly residing on a different page. This way information can be put into a collective pool, creating data consistency, data communication and less duplication of effort.

Boeing Calc Network provides a single spreadsheet file capacity up to 32 MB. The program uses a virtual memory technique paging to hard disk, thereby eliminating the need to use expanded memory boards. This method of program data storage is widely implemented on mainframes. In addition, the program offers optimized file compression and uses a sparse file matrix technique. The result is that operations are faster because commands work on only the active cells, rather than on the whole spreadsheet space. Users will now find that the 747-size *Boeing Calc* is now as fast as *Lotus 1-2-3* in most operations.

In a spreadsheet designed for multi-user access, there are special considerations—multiple access control, data security, file typing, operating environment and systems administration. *Boeing Calc LAN* allows users in "read" mode to access the same cell concurrently with each other. It also provides password protection in several different ways. There is an exclusive file-type that can be set to allow access by only a single user.

The access permission varies; it can allow full control of the spreadsheet, access limited to a cell range, or total lockout from a range. Entry to the access control menu is limited to the systems administrator, who can control access to spreadsheets, ranges, pages or cells. In addition, the systems administrator can establish three different file types. An exclusive file type allows for access by one user at a time, a shared file type allows several people to work in selected ranges, and a checkout file allows a user to check out a range for use on a work node. *Boeing Calc LAN* uses a two-tiered menu structure very similar to *Lotus 1-2-3*. The program is also able to import files from *Lotus 1-2-3* Ver. 1A, Rel.2; *Symphony* 1.0, 1.01, as well as ASCII and DIF files.

Also look soon for **Boeing Graph**, a special version of the amazing graphics package by Three-D Graphics called **Perspective**. *Boeing Graph* will provide the user with a seamless link into what could very well be the finest graphics package on the PC market. This powerful combination will allow users to chart data to the screen or a printer in two or three dimensions and to use an unlimited number of data points.

PC TO MAINFRAME LINKS

In the corporate world much of the current and accurate information is on the company's mainframe. The analysis tools, on the other hand, are often on a PC. Connecting the two used to be costly and difficult.

We have found that by using **DCA**'s **IRMA**, the first PC-to-mainframe coaxial interface, that it's simple and cost effective to bring together the mainframe's power and massive information storage and a PC's flexibility. With IRMA, users can operate a PC as either a 3270 terminal or as a standalone microcomputer, then transfer information between the PC and mainframe. This combination allows individuals to have fast, efficient and reliable access to critical mainframe data. IRMA can be a perfect answer for giving 3278/79 terminal capabilities to IBM PCs and compatibles located at IBM 3270 terminal controller sites.

Many corporate users do file transfers between their PCs and mainframes, and we have used a number of software packages to provide transfer capability. We have found that **IRMAlink FT/TSO** provides an easy-to-use system for transferring files between PCs with IRMA and IBM mainframes running MVS/TSO. The user can initiate a file transfer by simply entering the names of the source and destination files and pressing a function key.

DCA's **IRMAlink FT/3270** software lets you transfer files between your IBM PC and mainframe equipped with IBM host code in a 3270 communication network. *IRMAlink FT/3270* can satisfy most transfer requirements in any of three host environments: CICS, VM/CMS or MVS/TSO. The program can also send and receive mail and document files for a PC using IBM's PROFS/PCC and a host equipped with the mainframe version of PROFS.

CONNECTIVITY PROBLEMS

As connectivity becomes more of an issue, many IBM PC-type machines are revealing previously unsuspected design incompatibilities. The circuit boards that are used in networking, emulation and other advanced communications employ far more of a microcomputer's internal resources than do most add-on boards or software. For instance, many communications devices make use of some of the less-commonly used voltage lines on the system bus or rarely used direct memory access channels (DMA). Computer systems used in more sophisticated environments must be compatible with standards covering the system BIOS, the NET BIOS, the system bus, system timing and DMA channels.

Some of the problems with incompatibility arise from variations in system bus timing in different PCs and compatibles. There seems to be a lack of an industry standard for the architecture of the PPC bus, because there is no documented or validated bus interface. A few of the Taiwanese PC clones have wired the DMA channels improperly due to a lack of this engineering documentation. Not having a −5 volt line in the system bus is a problem that shows up in some of the older clones. At the time these machines were sold, there were no cards that made use of this voltage, so some manufacturers didn't feel the need to build such a line into their designs.

PCs and ATs or compatibles running at clock speeds above the standard are also posing compatibility problems, and aren't always able to run all of the communications boards without slowing the system speed back down. There is also one communication package that won't work on anything but an IBM-labeled machine. The IBM 3270 emulation program shuts itself down if it detects a non-IBM system BIOS.

The golden rule on working with connectivity problems is to check the machines you intend to use for compatibility with the configuration you intend to put together. It would be simple to tell you to use IBM equipment to avoid any problems, but inconsistencies have been noted in IBM equipment. Problems have been reported in early IBM PCs, IBM XT 286s, and some other machines. In most cases the problems can be worked out, but there are some instances in which the system architecture does not allow a fix; this is the case with some of the Taiwanese clones and some early PC clones made in the US.

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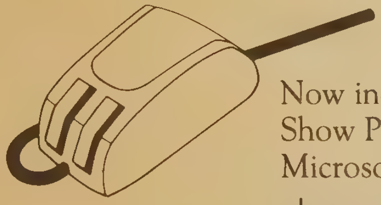

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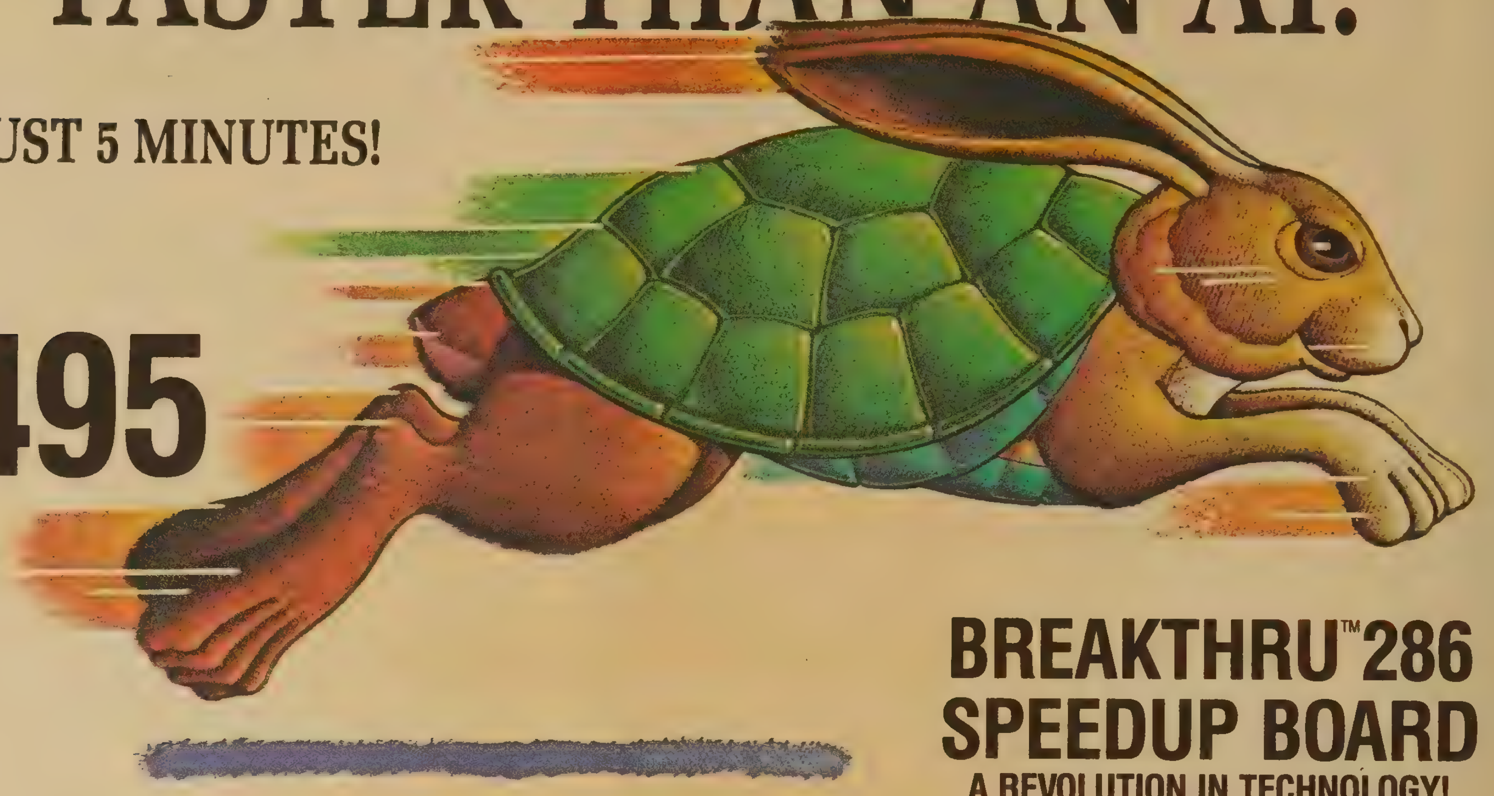

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It's a half slot card, only 5″ in length. You don't give up a full slot. And it comes with simple instructions.

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Unlike others, it works with the Compaq computer and other compatibles. And all existing RAM, hardware, and peripheral cards can be used without software modification.

4. FOURTH, it is the BEST there is!
The **BREAKTHRU 286** is unequivocally the best executed and most completely reliable speedup board manufactured today. Just look at the benchtest comparison chart in this ad to see for yourself.

HERE'S WHY IT'S THE BEST!

1. Intel 286 processor.
The Intel 80286 processor powers the IBM AT. Other boards like Orchid and Quadsprint use outdated processors.

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The 286 accesses data and instructions 16 bits at a time. Therefore, you must use the caching technique to process. Cache as used by the **BREAKTHRU 286** is more cost effective and more compatible.

3. 8 MHz clock speed.
Most boards using a 286 & cache memory run at 7.2 MHz. Ours runs a FULL 10% FASTER than Victor, Mountain, or PCT. When time is of the essence, our 286 stands alone.

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The **BREAKTHRU 286** Speedup Board has a 16K cache. The other boards have only half as much.

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The **BREAKTHRU 286** provides on board logic to buffer the write, enabling the processor to keep going at full speed.

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TABLE OF BENCHMARK RESULTS

	Victor	IBM AT	BREAKTHRU 286
Clock Speed in MHz	7.15	6	8
Empty Loop	2.81	1.99	3.34
Integer Add fr. mem.	3.74	3.35	4.41
Integer Mult. fr. mem.	5.78	6.06	6.55
Fl. pt. w/out coproc.	3.63	3.33	4.42
Fl. pt. w/8MHz cop.	1.65	n/a	1.82
Prime number test	2.47	1.95	2.85
Lotus 123 macro (640K)	3.16	2.64	3.69
Lotus 123 macro (256K)	3.07	1.77	3.54
Norton System Info Test	6.54	5.73	7.34

In every case but clock speed, the numbers indicate how many times faster a test is performed than on a regular IBM PC.

Works with all IBM PCs, XTs, and Compatibles. Software compatibility: Lotus, Intel, LAN, Microsoft, etc.

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■ Abaton Technologies of Pleasanton, CA, who recently introduced sheet fed and flat bed scanners for the Mac and C-Scan software, is planning introductions for the IBM desktop publishing marketplace in March of next year.

■ The expected entry of the Amstrad computer into the US certainly won't be problem-free . . .there's a shortage in the number of entry-level units available, along with product cost increases and problems with the machine's actual compatibility as a PC-clone.

■ And then there's Apple, whose expected/ alleged/ Macintosh product intros continue to attract a great deal of press attention. We've learned of the following:

First, for laser users, Apple is supposed to be bringing out a new low-end laser printer to the marketplace for less than $2,000 . . . but this one won't support PostScript, instead depending upon the QuickDraw routines inherent in Mac software to drive its engine.

Secondly, it's alleged that one of the three new Paris model Macs is the color Mac workstation that could make a dent in Apollo and Sun sales to the engineering and CAD/CAM environments. The engineering workstation will sell for a little less than $7,000.

The standard, basic Paris is the one purportedly known as the open Mac; it'll not only have a keyboard modeled after the IIGS, but a 68020 CPU pumping at 16 MHz and eight expansion slots, all for around $4,000.

A third model will supposedly sport a full-page display and a 40 MB drive for around $5,500.

Yes, there's even more! Look for a supposed new upgrade to the Mac Plus, the Aladdin Mac, which also has the 68020 CPU, two expansion slots and two built-in 800K drives, all for less than $3,000.

Apple will also allegedly be releasing, during the second quarter of '87, brand new, 3½" drives that can store as much as 1.6 MB of data!

■ It is rumored that Apple, anxious for software for the IIGS, is willing to pay incentives of from $25,000 to $100,000 for new offerings that support ProDOS 16, the operating system of the IIGS computer.

■ A Colorado-based developer, Dynamac, has allegedly signed a VAR agreement with Apple to produce a laptop Macintosh which will weigh less than 20 pounds, pack either a 40 or 20 MB hard disk drive, and have as much as 4 MB of RAM. Pricing, depending upon system configuration, will range from around $4,995 to nearly $7,000. Another company, Colby Systems, also intends to bring to market a LAP-MAC, with or without a VAR agreement with Apple.

■ Hayes Microcomputer Products' planned imposition of a two-percent royalty fee on all Hayes-compatible modem products, based on the fact that Hayes was granted a patent in '85, has not met with favor from other vendors. In fact, the "opposition" held a rally during COMDEX and plan to team up to fight the Hayes plan.

■ Now it appears that early 1988 is the fastest we can expect that protected mode MS-DOS 5.0 that mega-giants Microsoft and IBM have been playing around with. If, according to rumor, developers won't be able to utilize kits until late next year, you gotta give them at least six months to come up with something viable for the retailers' shelves. . .

■ Expect a battle royal as Seattle Computer starts fighting Microsoft for the right to sell MS-DOS licenses. Back in '81, this small company designed and then sold a product called 86-DOS to an equally small Microsoft, which has now challenged Seattle Computer's right to sell operating system licenses.

■ In spite of the fact that The Source dumped nearly $14 million in revenues into the corporate coffers, Reader's Digest is looking to sell its 80 percent share of that videotext service.

■ All was not peaches and cream for some of the vendors at COMDEX Fall. Wholesale Outlet (Albany, NY) felt the wrath of the FCC as United States Marshals swooped down upon its booth and seized several non-certified devices from floor display. The company, already fined $2,000 in the past for such activities, now faces additional prosecution by William Maddox, United States Attorney for the District of Nevada.

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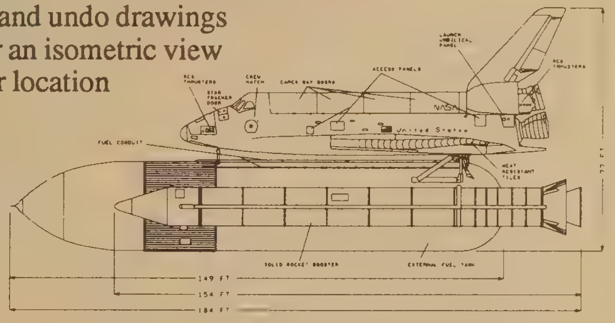

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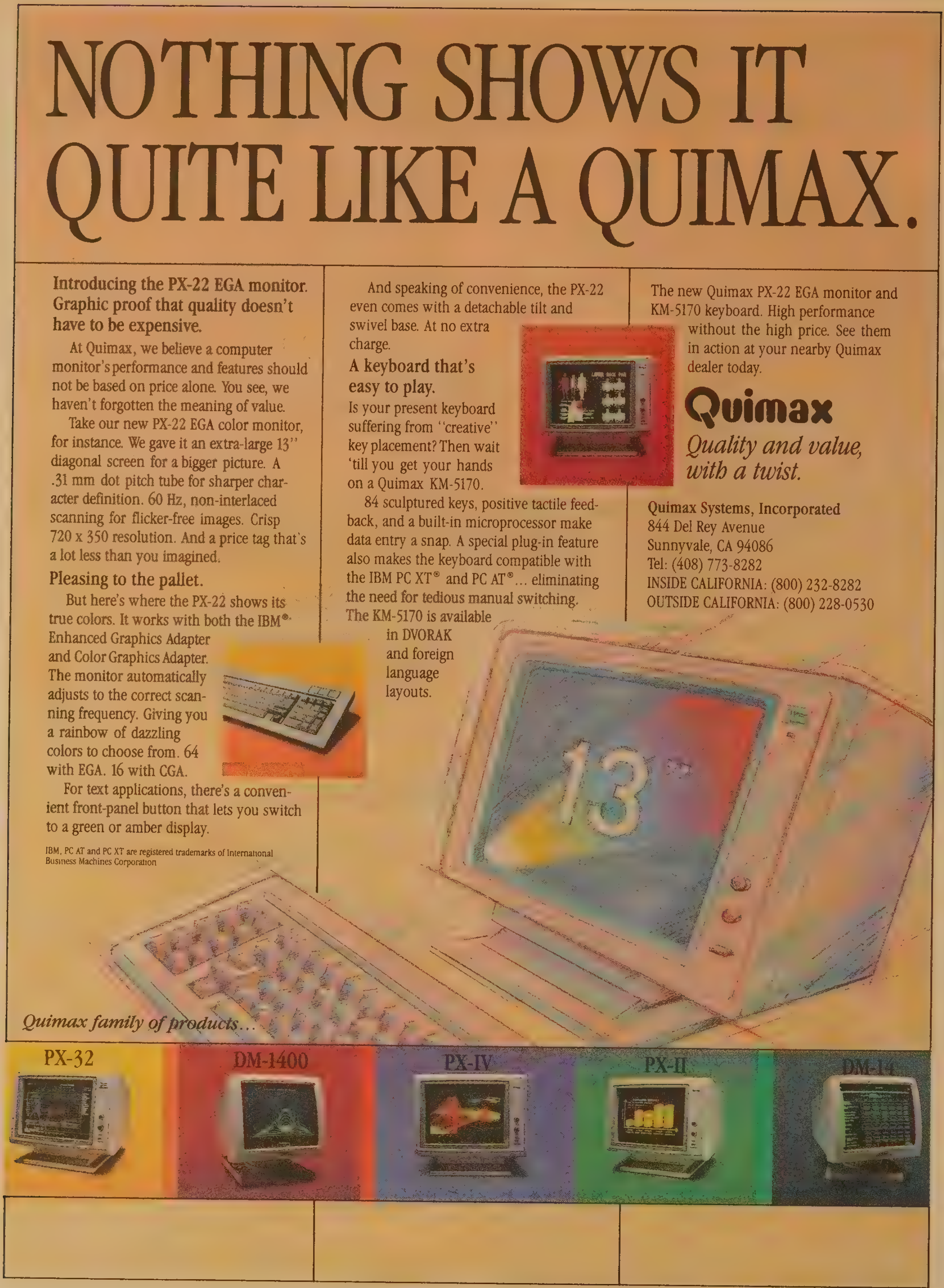

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Datacopy Develops PreScript

Datacopy Corp. (Mountain View, CA) is completing development of a high level programming language called PreScript, designed to perform complex image processing functions through calls from office automation application programs.

DEST Licensing Agreements

DEST Corp. (Milpitas, CA) has signed licensing agreements with 15 desktop publishing software vendors: MicroPro International, G.O. Graphics Inc., Archetype, Inc., IMSI Corp., Studio Software Inc., Software Channels Inc., Manhattan Graphics Software Inc., Megahaus Software Inc., Award Software Inc., Software Publishing Corp., PS Publishing, Boston Software Publishers, AGE Corp., and Aldus Corp.

DSC Acquires Nestar

DSC Communications Corp. (Plano, TX) has acquired Nestar Systems, Inc. (Mountain View, CA). Charles J. Hart will continue as the company's president and CEO.

PAGEmaster Incorporates GammaFax

GammaFax from GammaLink (Palo Alto, CA) will now be an optional feature for Advanced Vision Research's PAGEmaster desktop publishing system. GammaFax allows IBM micro users to send documents directly from their PCs, via telephone lines, to any digital facsimile device.

Computers For Hospitalized Kids

Hi-Tech Expressions (Coconut Grove, FL) has announced a national project for children's hospitals, designed to foster communication between hospitalized children and their friends and family, using Hi Tech Expressions software and Atari computers. Ten major children's hospitals will each receive three Atari 800XL computer systems and Hi Tech Expressions software and paper supplies. Atari has donated thirty systems.

Insight Signs European Agreement

Insight Development (Moraga, CA) has signed The Professional Connection (London, England), as the master distributor in Europe for the LaserControl line of laser printer utility software. Insight has also received a contract from The Laser Connection, a division of QMS Corp. (Mobile, AL), under which the company will supply a version of LaserControl to be offered on the QMS Kiss and Big Kiss laser printer products.

Microlytics Bundling Agreement

Microlytics, Inc. (East Rochester, NY) has announced that MicroPro International Corp. (San Rafael, CA) will be bundling Microlytics' *Word Finder* electronic thesaurus with its *WordStar Professional* during a special marketing program. In addition, Microsoft will be bundling *Word Finder* with its Microsoft *Word*, v3.1 word processing program.

New Mindscape Division

Mindscape Inc. (Northbrook, IL) has formed a new division called Thunder Mountain, with each software title carrying the same suggested retail price of $9.95. First in the lineup is *Rambo: First Blood Part II*, an action graphics program.

Newsnet News From China

NewsNet (Bryn Mawr, PA) has expanded its international news coverage with the recent addition

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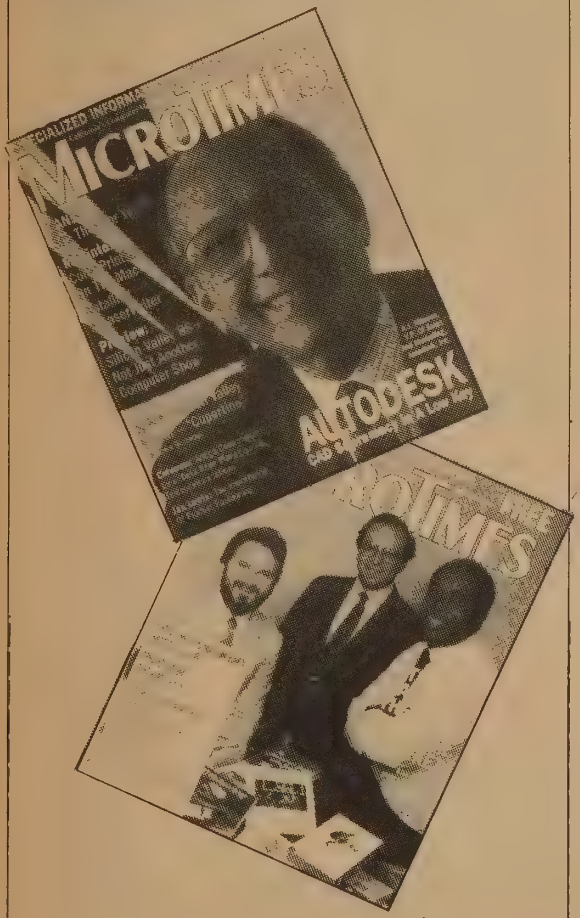

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Read-Write Device From Optotech

Optotech, Inc. (Colorado Springs, CO) has announced a read-write device driver that enables off-the-shelf and custom PC-DOS software to use Optotech's write-once optical disk drive without modification. The device driver will be available in the first quarter of 1987.

NEW PRODUCTS

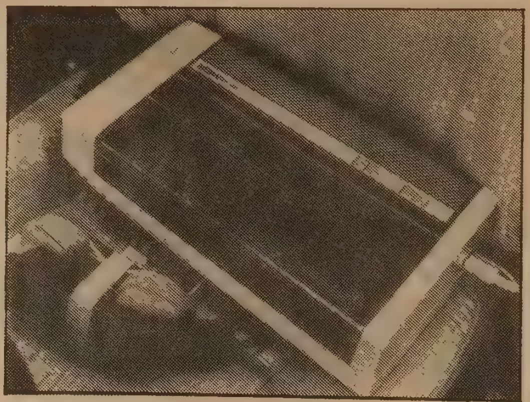
RECREATIONAL/ EDUCATIONAL

Games From Activision

Activision, Inc., has finally released *Portal: A Computer Novel*, which takes the player to the year 2106. Having returned from an aborted 100-year voyage to find a peaceful but people-less world, the player delves into Worldnet databases to scan the records of the vanished civilization. Slowly, the thread of the story begins to unravel as the game's interaction revives the sole survivor of the lost world: a biological computer named Homer. The game's massive database requires that it be released on multiple disks for all systems. ($39.95)

Activision has also brought *Aliens: The Computer Game* to the C64/128 computer. Simulating the movie's struggle against mankind's ultimate foe, this offering features six game segments that tie closely to the movie's storyline and action, permitting the player to experience every scene from navigating the drop-ship to combating the alien queen. ($34.95)

Another release is a software program that allows you to quickly design and script cards, invitation and announcements for any occasion. *The Greeting Card Maker* personalizes and prints in color or black and white, and includes six different size cards, scores of pictures, two dozen background patterns and borders, eight type styles in both upper and lower case, and a wide variety of verses. There's also an envelope maker and address book included. ($34.95 for C64/128)



Port-A-Fax

Medbar Enterprises Inc. (212/986-6668) has introduced Port-A-Fax, a 7-1/2 pound facsimile machine that can be used with home phones, car and pay phones, and on any type of business system. It's powered by internal, rechargeable NiCad batteries. Compatible with all Group II and III facsimile machines, the Medbar fax uses a high-quality acoustic coupler secured with a durable elastic strap that attaches quickly to any telephone headset, with no electrical connections required. Port-A-Fax receives pages on 8.2 inches by 11.6 inch sheets of electro-sensitive paper and comes with a battery charger.($1,495)

New From Electronic Arts

Electronic Arts (415/571-7171) has announced that its award-winning conquer-the-world strategy game, *Lords Of Conquest*, is now available for Apple II computers. A single player may play against the computer or up to three other players. Players may also use the program's built-in maps as they are, modify them, or design their own game map with the game's map generator. ($39.95)

Moebius—The Orb of Celestial Harmony, a fantasy role playing game published by Origin Systems (the creators of the famous *Ultima* series) has also been released by Electronic Arts for the Commodore 64/128. *Moebius* takes the role-playing adventure into a martial arts environment, with 3-D graphics and vivid portrayals of karate and sword-fighting sequences. This adventure begins in a colorful and complex Oriental world of intrigue, mysticism and magic. There's also two-way communication with townspeople. ($39.95)

EA has also introduced *Radio Baseball*, a new sports simulation that puts the player into the role as manager of a baseball team. The player manages against a friend, or against Abner, the computerized manager, with a "broadcast" description colorfully depicting every game action. Success in winning depends upon how well you manage each player on your team. ($39.95)

Mike Edwards' *Realm Of Impossibility* is also now available for the Apple II family. Using a

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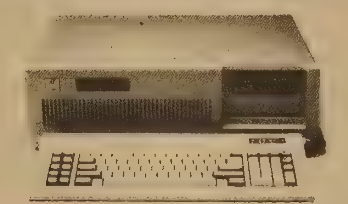

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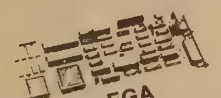

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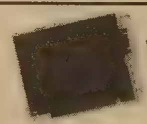

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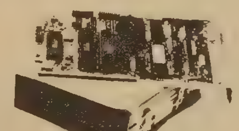

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trusty joystick, the solitaire player must search through a vast complex of 13 dungeons for the seven crowns of the middle kingdoms. In truest dungeon tradition, each murky level contains its own dangers and oddly-shaped creatures to be faced—as well as the occasional spell, scroll or key to help you along. ($14.95)

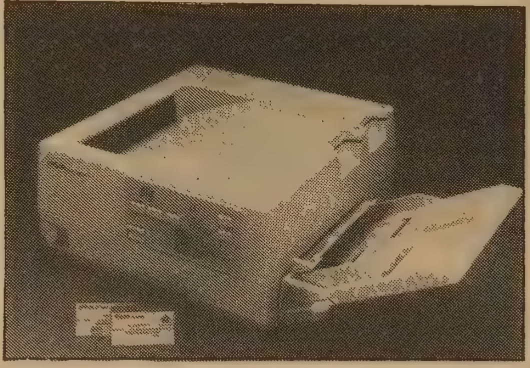
The company has also released *Exodus: Ultima III*, the epic, fantasy role-playing masterpiece, in versions for both the Atari ST and the Commodore Amiga computers. This latest offering is designed to take advantage of the superior graphics and sound capabilities of both machines; it features a newly incorporated window system providing improved ease of play. Designed by Lord British and Origin Systems, over 26 monsters await to test your mettle. ($59.95)

More From Epyx

Epyx (Redwood City, CA) has released *Championship Wrestling* for the Apple II and Atari ST. This game features eight distinctive wrestling personalities. Players choose which personality they want to be, and then play alone, against the computer, or against up to seven other players in an effort to win the most coveted prize of Championship Wrestling: the World Wrestling Belt. There are 25 classic wrestling moves, from body slams to flying dropkicks to headlocks to airplane spins and then some. There is also a "Have A Ball On Us" promotion which offers consumers a free Wilson football, basketball or soccer ball when they send in proof-of-purchase and dated sales receipts for the three EPYX sports games.

Epyx has also released the motorcycle racing game *Super Cycle* for Atari ST computers. This offering puts players behind the handlebars of 750 ccs of screaming chrome and pistons and provides gaming action that's very realistic. The game requires split-second decisions and nerves of steel to beat the clock and be successful. Day and night countryside scenes and city skylines fly by as players race to victory and even greater challenges at higher levels of difficulty.

Also debuting from Epyx is the ST version of *World Games*. Players travel around the world to compete in eight international sporting events: diving off the Acapulco cliffs, barrel jumping in Germany, sumo wrestling in Japan, log rolling in Canada, racing in a giant slalom race in France, weightlifting in Russia, and the Caber Toss in Scotland.



The GQ-3500 is a new, efficient laser printer from Epson.

Epson GQ-3500

Epson (213/539-9140) has debuted the GQ-3500, a laser printer designed to compete with the Hewlett Packard LaserJet Plus. The printer comes with 640K of memory that can handle a full range of text and graphics functions. The more compact machine utilizes a second generation laser engine and has a very fast warmup time of 45 seconds. The first page prints in between 22 and 25 seconds, with an overall speed of 6 ppm. The GQ-3500 has two built-in, user accessible IC card slots located on the right side of the machine, which allows users to select the printer's emulation mode. The printer comes standard with a parallel printer interface. ($2,495)

GFL Championship

Gamestar (division of Activision, Inc.) has released *GFL Championship Football*, a complete football simulation for major home computer systems. This simulation puts players down on the field, providing them with a ground-level, in-the-helmet perspective. Not only are players on the field, but scrolling screen animation gives players the feeling of actually moving up and down the field while engaging in any of the 34 offensive plays, 12 defensive alignments, kick-offs, field goals and punts. Players can select their team's playing style, then compete against a friend or any of the 27 separate computer-controlled GFL opponents. ($39.95) Atari ST and Amiga versions will debut early in January '87.

Computer Laptop Chess

Mindscape Inc. (312/480-7667) has introduced *Computer Laptop Chess*. The program sports plenty of features to please the chess addict, including 16 levels of play, a large library of book openings, the ability to save games in progress, and easy-to-use move entry. *Computer Laptop Chess* will be available this month for Toshiba, NEC, IBM PC Convertible, Zenith, and other MS-DOS machines. ($39.95)

Might And Magic

New World Computing, Inc. (800/443-1888) will soon be releasing *Might And Magic, Book One:*

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The Commodore Show is the only West Coast exhibition and conference focusing exclusively on the AMIGA, Commodore 128 PC and C-64 market.

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Check the MicroTimes Calendar of Events in this issue for computer-related classes, seminars, and shows in your area.

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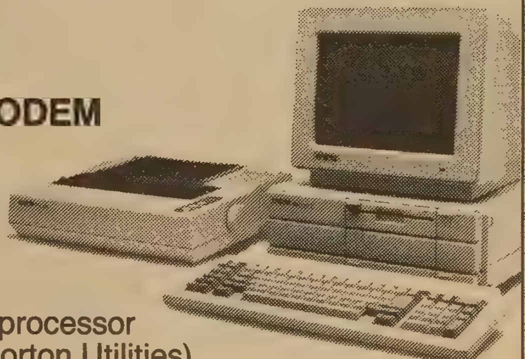

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Secret of the Inner Sanctum. This is the first offering in a series of innovative fantasy role-playing games that offer a complete world to explore, with hundreds of special events and encounters. There's a 18″ × 12″ color fold-out map of the Land of Varn, a quick reference chart for the 94 castable spells. Contained on two disks, this offering is for Apple II computers including the IIGS. ($54.95)

SSI's Games

Strategic Simulations Inc. (415/964-1353) has released two new Macintosh game conversions—*North Atlantic '86* and *Computer Ambush.* The former is a massively scaled land-sea-air simulation of a hypothetical Soviet-NATO confrontation, while the latter finds the players in command of American or German soldiers in squad-versus-squad combat in France during WWII. ($59.95 each)

Strategic Simulations has also released *Warship,* its newest wargame. The Pensacola, Exeter, Kirishima and practically every other warship that fought in the Pacific from 1941 to 1945 are included in this game by Gary Grigsby. Players can select from 79 classes of warships from the Allied or Japanese fleet, or modify ship data to create their own battlships. Four scenarios are included (three historical, one hypothetical). Players can also depart from the provided scenarios and devise original maps to create any possible ship to ship tactical combat. ($59.95 for Atari 8-bit systems)

Also introduced is *Gemstone Healer,* the sequel to the bestselling fantasy game *Gemstone Warrior. Gemstone Healer* takes players back to a fantasy world of magic and intrigue where resourcefulness, cunning, and weapons such as swords, crossbow, fireballs and magic combine to help the player meet and conquer a horde of deadly monsters. The warrior must locate the Healing Tools in the Demon's Lair to restore the Gemstone. ($29.95 for C64/128)

ST/Amiga Flight Simulator II

SubLOGIC Corp. (217/359-8482) has introduced *Flight Simulator II* for the Atari ST and Commodore Amiga computers. You can take a trip from Boston to New York in a Cessna 182 single-engine aircraft, or zip down the coast at 500 miles per hour in a Gates Learjet 25G. High speed 3D graphics provide a spectacular panoramic view as you practice takeoffs, landings, and aerobatics. You can even test your flying skills in the World War I Ace aerial battle game. Multiple windows allow you to watch two or more viewpoints simultaneously. ($49.95)

AMIGA

Lattice C Compiler

Lattice, Inc. (312/858-7950) is releasing Version 3.10 of the *Lattice AmigaDOS C Compiler.* In addition to the new library with 100 functions more than the standard Amiga C, Version 3.10 features increased library modularity and new addressing modes that help reduce load module sizes by more than 20 percent.

ProWrite

New Horizons Software, Inc. (512/329-6215) has announced *ProWrite,* which is scheduled for release in February. *ProWrite* offers a wide choice of proportionally spaced character fonts, sizes, styles and colors. In addition, the mouse- and keyboard-based program incorporates Amiga's extensive graphic capabilities and allows editing functions among as many as eight windows at once. ($124.95)

APPLE II

DOS Boot

Orange Micro Inc. (714/779-2772) has introduced DOS Boot, a coprocessing system that makes the Apple IIGS IBM PC compatible. There's 256K of onboard RAM, expandable to 512K. If you use RamPak 4GS or other memory cards, the onboard memory can be expanded to 640K. Other features include an IBM-compatible floppy drive controller, a mouse, game ports, IBM CGA emulation, and two serial and one printer port. A numeric coprocessor may also be added.

Lifenet LAN

Univation Inc. (408/263-1200) has acquired the exclusive marketing rights to Lifenet, a highly advanced fault-tolerant LAN operating system for PCs from the Lifeboat Systems Designer Team of Troy, MI. This system provides data security features such as transaction processing, transaction logging and file recovery software.

The Most Remarkable Computer Your Family Will Ever See. Or Hear.

It's called the Apple IIGS,™ and its graphics and sound are what make it such a remarkable addition to the Apple® II family of computers.

To be exact, you'll see highly-sophisticated graphics come alive—in 4,096 shades of brilliant, vivid color. Which means, the Apple IIGS can change the way your kids look at learning. Or the way *you* look at work.

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- Standard Color Graphic Card or Opt. Mono Card
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- Diamond Flower Multi I/O Card w/floppy controller
- Fully Assembled and Tested
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- Standard Color Graphic Card or Opt. Mono Card
- PC/AT Switchable Keyboard
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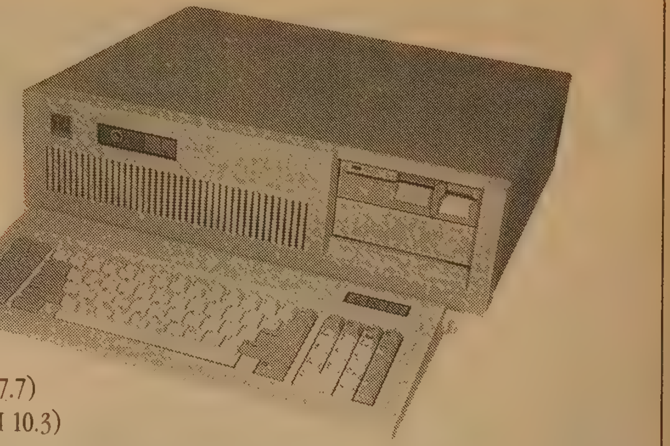

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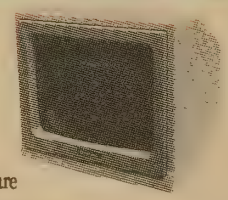

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- 12″ screen
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- IBM Color Monitor **$345**

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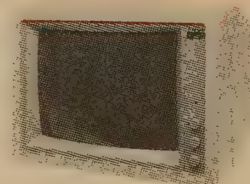
EGA MONITOR



- 640 x 350
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- EGA and CGA
- FCC class 'B' approval

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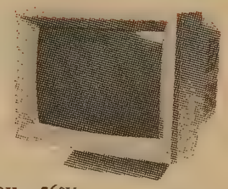

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- No Installation required
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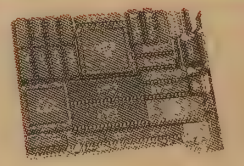
Club Micro EGA



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PGA Card CALL

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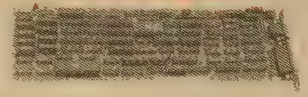

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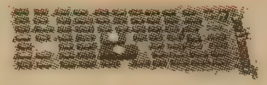

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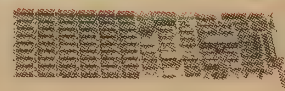

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- Serial Port
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- Game Port and software

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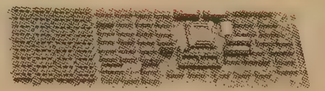

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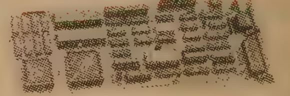

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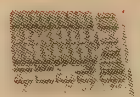

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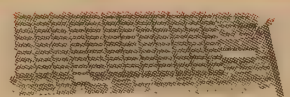

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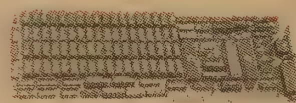

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- Runs at 12 MHZ
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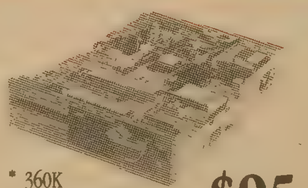

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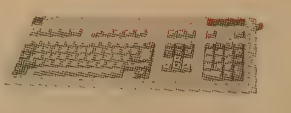

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- AT Style Keyboard w/LED

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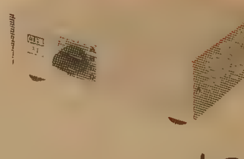

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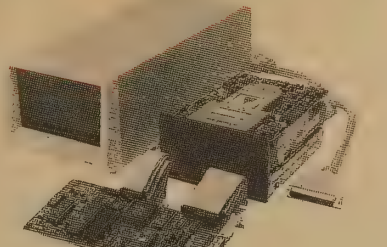

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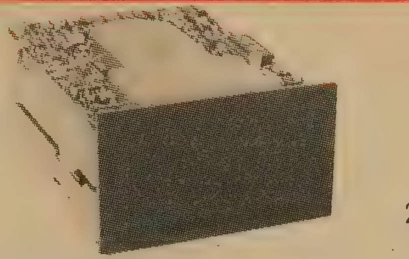

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39 ms Access time

- 39 ms access time
- Auto Head Parking
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- Cables, AT sliding rail and Software included

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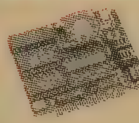

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- Color: PC/XT Color
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- 8088-2 CPU, 4.77/8.0 MHZ
- Legal Compatible BIOS
- Floppy Disk Controller
- 8087 Math Co-processor (option)
- Dimension: 17.5 x 19 x 6.1
- 640K Memory 256K Standard
- 90 day Warranty
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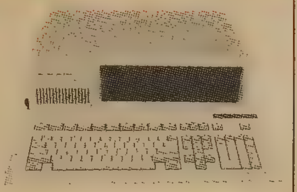
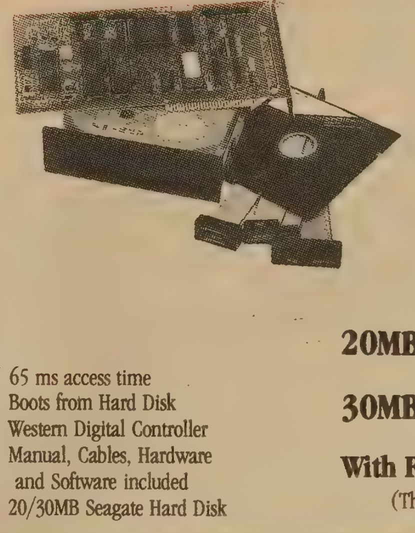


20/30 MB HARD DISK SUBSYSTEM



For PC Upgrade to XT

- 65 ms access time
- Boots from Hard Disk
- Western Digital Controller
- Manual, Cables, Hardware and Software included
- 20/30MB Seagate Hard Disk

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20MB	$365	$567
30MB	$425	

With Floppy Controller Add $50

(This applies to 20MB subsystem only)

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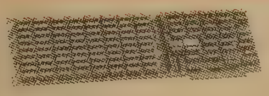

- Works in PC/XT/AT
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- Fits in LIM/SIM-EMS
- Expanded Memory Specs
- Made in U.S.A.
- Lotus Intel compatible

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Seagate 4051	$638
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64K DRAM

150 ns (9 pcs.)	$9
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256K DRAM

150 ns (9 pcs.)	$27
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FOR AT

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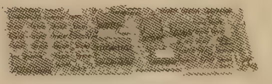
FOR PC/XT



$140

OTHERS

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PC/XT controller	*$90*
Floppy controller	*$49*
25 Pin Serial Cable	*$18*
Split Power Y-cable	*$8*
IBM Type Printer Cable	*$15*
IBM AT Bus Extended Card (good for test & debug)	*$30*
AT HD/Floppy Controller	*$170*
Compaq 286 Hard Disk Controller	*$188*
PC/XT HD/Floppy Controller	*$140*

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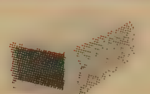
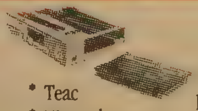


- W/Power supply
- Good for 2 drives

STREAMING TAPE BACKUP



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RapidFile

Ashton-Tate (213/329-8000) has introduced *RapidFile*, a high-performance file manager that allows business users to manage data, create reports, write form letters and produce mailing labels. The product uses *dBASE III PLUS* files and also offers users a direct growth path as their data management needs become more sophisticated. The program offers a choice of interface, speed, storage capacity, and multiple functions on one disk as well as multiple layouts. ($395)

FormTool Upgrade

BLOC Development Corp. (305/531-5486) has announced that its program, *FormTool*, will possess new features as of January 1987. Version 2.0 has a new data merge capability, additional fonts, and more powerful word processing capabilities, as well as sideways printing and extensive printer support. *FormTool* lets you easily create, manage, print and further customize forms. ($95)

PC-TYPE+

ButtonWare (206/454-0479) has debuted *PC-TYPE+* (version 1.0), which comes with many new features: Mail-Merge, Fault Finder (a spelling checker), a Whoops! Key, the ability to edit multiple files, and more. The Fault Finder contains 100,000 words and checks for typos and double words; the Mail Merge option allows keyboard input and works with *WordStar* and *PC-File* databases; the PC-Label program eliminates the headaches of printing labels. The package has extensive onscreen help. ($69.95)

TimePiece

Communication Dynamics, Inc. (503/684-5151) has released a new project management program, *Timepiece*, which enables users to easily manage multiple projects using a common pool of resources, which can be tracked across multiple projects. Based on a time-indexed CPM network, *Timepiece* automatically calculates a project's critical path, slack time, and ending date as new information is entered. ($695)

NEC Multi-Speed

NEC Home Electronics Inc. (312/860-9500) has introduced a PC-compatible portable computer called the MultiSpeed. This unit operates at both 4.77 MHz and 9.54 MHz; it utilizes DOS 3.2 and features two 3.5-inch floppy disk drives. Other features include detachable screen with high-contrast LCD, built-in firmware with windowing, 640K of RAM, 512K ROM, and a separate numeric keypad. The MultiSpeed contains parallel, serial 232C and RGB video interface ports, as well as an external floppy disk controller port. ($1,995)

CyberType

CyberResearch Inc. (203/786-5151) is shipping *CyberType*, a desktop publishing program that operates from within Microsoft *Word*. *CyberType* has a new *CyberMerge* option that integrates halftone images from the AT&T TARGA video system or desktop scanners and graphic drawings from *AutoCAD*, *Lotus 1-2-3* and other graphics software, into word processed files. Both *CyberType* and *CyberMerge* packages are available at $495 each.

Enhanced Printrix/Fontrix

Data Transforms (303/832-1501) has enhanced the *Printrix* and *Fontrix* programs. *Fontrix*, which acts as a WYSIWYG typesetter, a graphics creation package, and a font editor, is now able to create and use fonts twice the previous maximum size. *Printrix* has been enhanced to accept the new, larger fonts created by *Fontrix*. Font libraries for both programs have been expanded to hold more fonts in memory, allowing up to 320K of memory for font storage.

GEM Draw Plus

Digital Research (408/649-3896) is now shipping *GEM Draw Plus*. Offering increased functionality, this new graphics program offers both keyboard and sidebar shortcuts, ability to save user preferences for next use, a help menu, and nested groups.

Spellbinder PostScript Version

Lexisoft (916/758-3630) has released a new PostScript version of *Spellbinder Desktop Publisher*, Version 6.3, which also incorporates Cordata laser drivers and the ability to perform quadplex and duplex printing. The quadplex and duplex capabilities were added to streamline the production runs of booklets and reports by automatically laying out text in proper sequence for side by side or back to back printing. ($695)

Intel 386 Software

Intel Corp. (503/681-2279) has extended its software development support of the 80386 microprocessor system to PC hosts with the introduction of a C language compiler and utilities package for IBM PC/AT and AT-compatible PCs running DOS 3.0 or later. The C 386 Compiler and RLL 386 Relocation, Linkage and Library Tools package are the industry's first 80386 development tools for PC hosts; they can be used on stand-alone PCs, PCs linked with other PCs, or with VAX and MicroVAX+ computers via the Intel OpenNET network. The C386 Compiler and RLL 386 Relocation, Linkage and Library Tools package are available now, for $900 and $600 respectively.

Software-Based PC Emulation

Phoenix Technologies Ltd. (617/769-7020) has announced the development of a "software coprocessor" technology that enables manufacturers of computers based on noncompatible processors (such as the Motorola 68000 family) to offer an MS-DOS-based PC-compatible operating mode entirely through software emulation. Shipments of the new product, *Soft Co-Processor*, to OEM customers will begin in the first quarter of 1987.

Crystal Publishing System

Syntactics (408/727-6400), a veteran of the UNIX environment, has released a new MS-DOS publishing system called *The Crystal Publishing System*. This package combines Syntactic's *CrystalWriter Plus* word processor with their new *CrystalTypeset* typesetting software. This is a document management tool that enables both experienced and novice users to produce typeset-quality docu-

European Report

By Ken Lisec

Communication Without Cables

Personal computers, printers, disks etc., can communicate with each other without complicated and expensive wiring costs. Using a building's electrical outlets, a system called Powernet 300 can be installed and the existing electrical wires used instead of separate cables. The system has a coding generator which enables up to 80 separate devices to be connected together. Introduced by Radamee Electronics of Crowthorne, Berkshire, the product is available now.

Clones, Clones, And More Clones

The low end of the U.K. market is totally cluttered with IBM compatible PC/XTs. More and more entries are appearing every day. Now for the top end of the market.

What does the AT area look like? Is it as cluttered as the low end? Are the price ranges as varied as the XT? Well, here are the facts—low end entry prices are quoted and no attempt is made to match features, but the system, as shown, is configured with a monitor, keyboard and magnetic storage. Keep in mind that two years ago there were no computers in this category selling in the UK.

COMPUTER	CHIP	SPEED	BASE $
AJWAD AT	80286	6/8/10 MZ	2,400
AJWAD 501 AT	80286	8/10 MZ	1,420
APRICOT XENI	80286	10 MZ	6,270
APRICOT XI 10	80286	8 MZ	2,837
APRICOT XI 20	80286	8 MZ	3,547
BASICTIME AT	80286	8 MZ	4,055
BRISTOL 286	80286	10 MZ	1,687
CAS AT/TURBO	80286	6/8 MZ	1,445
TI BUSINESS PRO	80286	6 MZ	5,673
COMPAQ DESKPRO 286	80286	6/8	4,820
COMPAQ DESKPRO 386	80386	16 MZ	7,666
COMPRO AT	80286	8.77 MZ	3,117
EPSON PC+	80286	8 MZ	2,950
GOUPIL G40	80286	8 MZ	5,110
HYPERPRO II	80286	10 MZ	6,745
OLIVETTI M28	80286	8 MZ	5,255
NCR PC8	80286-8	6/8 MZ	3,515
FERRANTI AT	80286	8 MZ	4,544
IBM AT	80286	6 MZ	4,083
HP VECTRA	80286	8 MZ	5,517
KAYPRO 286I	80286	6 MZ	3,550
IBM AT/E	80286	8 MZ	4,513
SPERRY PC MICROIT	80286	6/7/16 MZ	3,614
PCC8/10	80286-10	6/8/10 MZ	2,833
COMPAQ 286	80287	6/8 MZ	6,880
SPERRY PC/IT	80286	6/7.16/8 MZ	5,548
TANDON PCA	80286	6/8 MZ	2,478
TANDY 3000	80286	8 MZ	2,550
KYOCERA V286	80286	6 MZ	2,840
TELEVIDEO 286	80286	8 MZ	3,827
TOSHIBA T3100	80286	8 MZ	5,247
N.T. VIENNA AOC	80286	6 MZ	4,420
ERICSON WS286	80286	6/8 MZ	4,949
WALTERS AT	80286	8 MZ	1,987
WANG ADV PC	80286	8 MZ	4,004
ITT XTRA XP	80286	6/8 MZ	4,367
ZENITH Z-248	80286	6 MZ	3,607
VICTOR V286	80286	8 MZ	3,550

Thirty-eight of the PCs claim 100% IBM compatibility and range in price from just a little over $1,000 to $7,000. The list is growing so fast that a company has been formed just to test these clones and run standard software on them to prove compatibility.

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• CM-1322N	640 x 200
• CM 1370	720 x 400
• CM-1380F IBM EGA Compatible	640 x 350
• CM 1376 IBM PGA Compatible	640 x 480

MONO MONITOR

Model	Resolution
• MM-1222	800 x 350
• MM-1422	800 x 350

COMPUTER

- TCS-7000
  PC/AT Compatible

TERMINAL

- TVT-7220
  DEC VT 220
  Compatible
- TVT-7261
  ANSI-ASCII Terminal
  Emulates:
  * IBM 3101 MOD 881
  * DEC VT
  131/102/100/52

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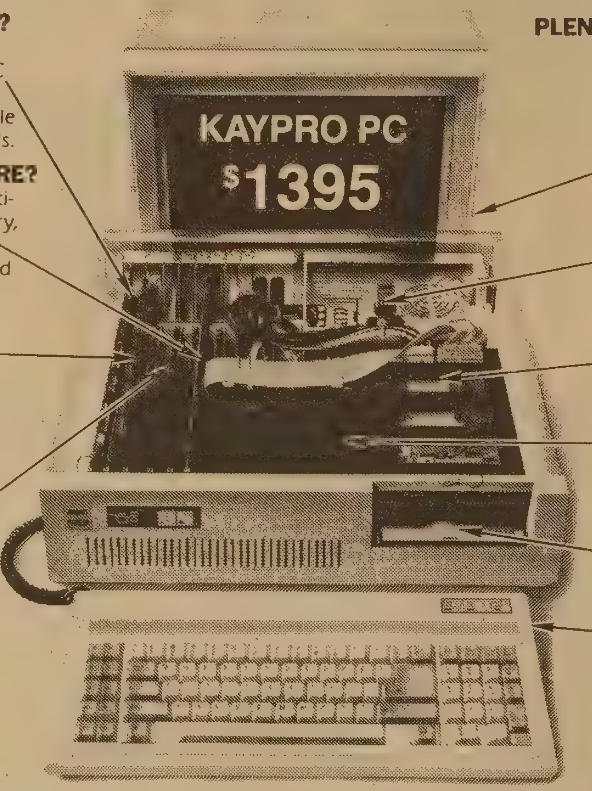

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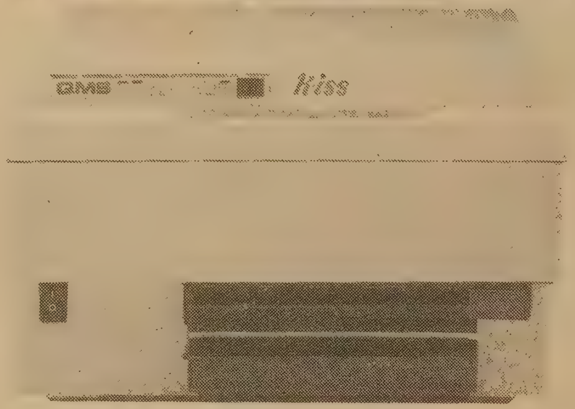

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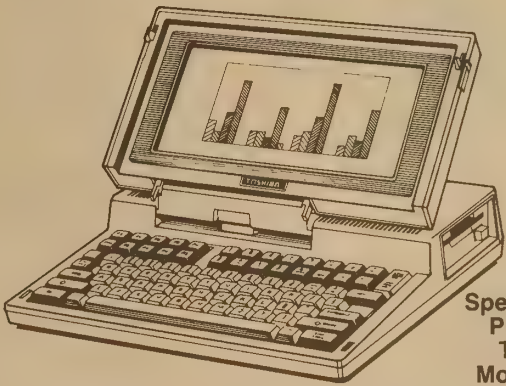

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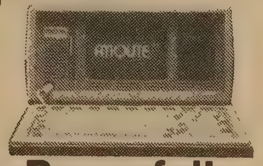

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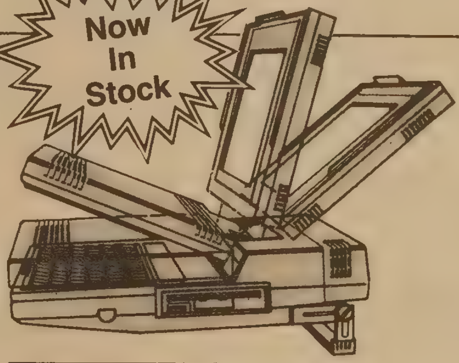

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Color Perspective

Three D Graphics (213/459-7949) has introduced *Perspective II*. This data graphics package can transform data, automatically, from other productivity programs, and can generate over 400 colors from the 16 basic colors offered by EGA and other compatible controllers. *Perspective II* features a five-key user interface, and also has over 30 help screens. ($395)

Quantum Graphics

Threshold Software Corp. (312/887-0480) has introduced *Quantum Graphics*, which produces PostScript based business graphics, which can be integrated with text on either a portrait or landscape page. ($395)

MACINTOSH

PageMaker Portfolio

Aldus Corporation (206/622-5500) is releasing *PageMaker Portfolio: Designs for Newsletters*. The initial release is for the Mac version of *PageMaker*; the company plans to release 21 different newsletter formats. These designs, or templates, will be packaged on disk and accompanied by a step-by-step instruction manual that explains how to incorporate your own copy, headlines and artwork into a finished newsletter. The manual accompanying the templates also gives users advanced techniques for adding a designer touch or two to their newsletter efforts.

Enhanced TurboPascal

Borland International (408/438-8400) has an enhanced version of *Turbo Pascal* for Macintosh users. Users can compile and run as many as eight separate programs—or eight versions of the same program—simultaneously while developing programs in *Turbo Pascal*. The offering now includes a special TurtleGraphics unit, which provides an easier way to handle graphics output to the Mac. ($99.95)

MS BASIC Compiler

Microsoft Corp. (206/882-8080) has announced the Microsoft BASIC Compiler for the Macintosh. The compiler allows programs written in Microsoft BASIC Interpreter to be compiled with little or no modifications. Compiled programs execute 10 to 30 times faster. A Toolbox Library accompanies the Compiler, which includes over 140 software routines that make it easier to access the Macintosh Toolbox ROMs. ($195)

NETWORKING/ COMMUNICATIONS

Cordata LAN

Cordata Technologies, Inc. (805/495-5800) has introduced a LAN system, comprised of the company's 80286-based file servers, communications hardware, and Novell, Inc.'s network operating system software. The CS 4400 series LAN is offered in two models based on the Cordata ATD, a high-performance AT-compatible computer which operates at 8 MHz with no wait states. The CS 4400 network operating system comes standard with CS 4400 series LANs, which feature full compatibility with MS-DOS 3.1 and NETBIOS. Each file server incorporates communications hardware and software that provide gateways to X.25 public networks and networks supporting IBM's 3270 SNA.

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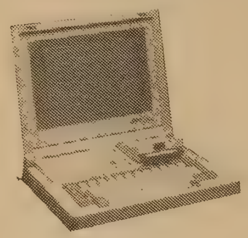

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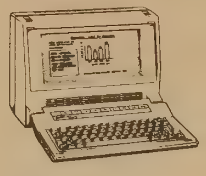

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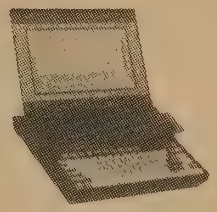

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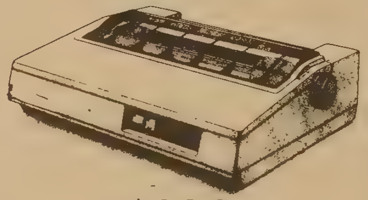

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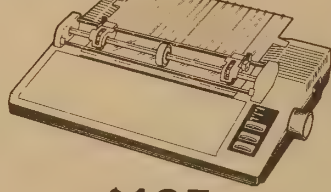

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The Third Generation PC

An Introduction to 80386-Based Microcomputers

By Ken Milburn

This year, more than ever, COMDEX (*the* major micro industry show) was an IBM/PC show. Sure, there was lots of excitement at the Atari booth. And somebody said they saw one Commodore Amiga being used to demonstrate software somewhere. Apple didn't even show up. The rest was devoted to converting the IBM/PC from a bi-plane to a rocket ship.

The fuel for the liftoff was the introduction of an exponentially more powerful member of the 8086 family of the Intel processor chips at the core of every PC. If you've read any computer publication (including this one) in the last 60 days, you've already heard about the 80386. The 386 is a true 32-bit microprocessor that presently runs at 16MHz clock speed. That means it can chunk through data and instructions about 18 times faster than your PC, about two and a half times faster than the average AT. Or, to put it another way, the 386 can run a PC/AT at twice the speed of a DEC VAX/1178 minicomputer.

Remember the excitement when we discovered that the PC could address 640K of RAM instead of the old CP/M limit of 64K? The 80386 can directly address 16 *gigabytes.* Intel plans to have the 386 running 50% faster (24MHz) within the next few months. Imagine a computer that clocks 25 on the Norton SysInfo program.

I tromped the aisles at COMDEX for five days looking at all the new computers, accelerator cards and operating systems that are being introduced to take advantage of the 386. My mission: Try to scope out the 386's impact on your use of and plans for new desktop computers in the immediate future.

Innumerable 386 machines have been introduced since Compaq, Advanced Logic Research and Corvus started battling over who introduced the first one. I counted ten being shown in official exhibits. Many more were being introduced by small companies who had rented hotel suites. The most notable exception is IBM itself, which will only say that it plans to keep up with advances in new technology. One wit stated that if IBM waits long enough, they'll have to announce their 386 machine as "Compaq-compatible." AT&T and Texas Instruments say that they'll wait to follow the leader.

The immediate uses for all of the "third generation" 386-based PCs fall into two categories: They will operate as very fast, fully-compatible ATs, or as the central engine for a multi-user system. The 386's speed makes it ideal as a file-server, and its vast memory addressability makes it an excellent candidate for UNIX-based multi-user systems.

It may not seem that doubling the speed of an 8MHz AT is worth the $2,000 (give or take $500) premium for a 386 machine. That's true for the majority of us, who use our machines as one-person workstations for word processing, keeping client lists and working with medium-size spreadsheets. Not that you don't get a rush from seeing the hard-disk directory flash by in the blink of an eye. Some people can't resist spending the bucks for a Porsche or Ferrari, either.

There are users who will get their money's worth out of a 386 machine strictly as a result of its "super AT" capabilities. They fall into four major categories:

- Graphic intensive applications. This includes not only Computer Aided Design and Drafting, but professional illustration, animation and real-world simulation.
- Electronic Publishing (DTP)
- Artificial Intelligence (AI)
- Multi-user systems (including networks).

Up until now, the DOS limit of 640K on RAM has lessened the demand for memory. The advent of 386 computers may foreshadow the end of the memory-chip sales slump. Multi-user, multi-tasking operating systems are voracious memory-munchers that will starve on much less than 4Mb of RAM.

OPERATING MODES

The 386 operates as three different "types of computers" at the same time. Each of these types is called a "mode."

Real mode: This is the mode that earlier Intel CPUs (8088-80286) run when they are first switched on. It uses exactly the same methods as the original 8088 to address 640K of memory, providing complete downward compatibility with programs written for the PC.

Protected mode: The 286-based AT can use this mode to address 16Mb of RAM, although DOS doesn't currently support such operation. When it does, it won't be able to run existing programs. The on-chip memory management and multi-tasking capabilities of the 286 and 386 are part of protected mode. The name comes from the fact that, when multitasking, each active segment is prevented from interfering with the others. The 80386 protected mode has some advantages over 286 PM. Being 32 bits wide, it can reside anywhere in the 4Gb memory range. It eliminates the 64Kb segment limit, so a program can use all 4Gb as a single segment. As a result, the 386 can manage up to 64 terabytes of virtual memory.

Virtual mode: This is the 386's way of maintaining more than one 8086 environment in memory at the same time. Each of these partitions can have its own segment of memory. All interrupts and I/O accesses from the various applications can be trapped and held in memory until they are actually using the screen. The advantage of a virtual memory operating system (VMOS) is that it can access otherwise totally unaffordable amounts of memory by "pretending" that a hard disk is RAM.

386 OPERATING SYSTEMS

The paradox of the 386 is that its capabilities give us vast potential for expanding the capabilities of desktop computing, yet it has been said that there is no DOS or application program that will go beyond the memory limits imposed by the first PC.

IBM seems to be protecting its

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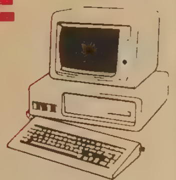

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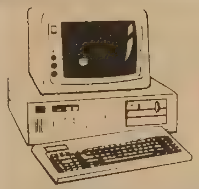

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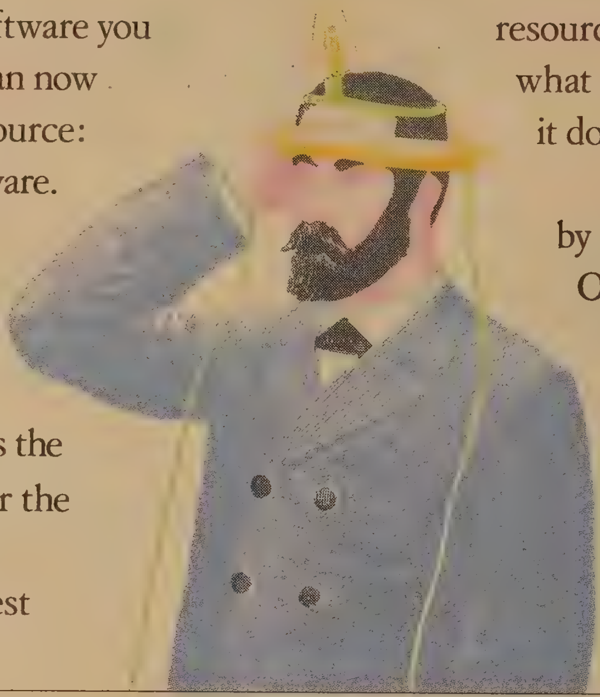

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minicomputer interests by delaying the introduction of a 386 machine. Microsoft obviously has a heavy interest in protecting its relationship with IBM. So chances are good that we won't see an official 386 DOS anytime soon now.

In the meantime, a protected mode DOS that breaks the 640K barrier and lets you do more than one task at a time would work on the 386 and put us light years ahead. Both Microsoft and IBM are rumored to be working on versions of such a DOS. Meanwhile the "insider" stories about what, when, where and why of MS-DOS 5.0 /A-DOS /286DOS /MP-DOS /DOS-CP /VAPOR-DOS are so much in conflict that one wonders whether there will ever be such a thing. Microsoft keeps pushing up its non-deadline, so if we're lucky we may see such an OS sometime in 1988.

We won't be missing much if such an operating system never arrives. By the time you read this, you will be within a few weeks of being able to buy a basket full of alternative operating systems to let you get at some or all of the 386's added muscle. All of these options will run your existing PC/MS-DOS software. Most of them cost less than $200—you could easily afford to take advantage of the system now, then judge Microsoft's VAPOR/DOS on its own merits when and if it arrives. Meantime, there's no serious penalty to pay.

Each of the alternative operating systems makes use of what is called "Virtual 8086 Mode." VM allows the 386 to act as though it were several 8086-based IBM/PCs, each with its own applications and utilities running. Each of these "virtual machines" can run applications software just as if it were running on a dedicated computer, even when only one of them is visible on screen—except that they're zipping along 18 times faster.

DOS SHELLS

First of all, there are the windowing "shells" for DOS. Both Microsoft's *Windows* and QuarterDeck's *DesqView* employ "virtual memory" schemes. Virtual Memory (not to be confused with "virtual machines" or "virtual mode") pretends that hard disks, RAM disks and Lotus/Intel/Microsoft Expanded Memory is an extension of RAM. This lets you load more than 640K worth of applications into different windows, then switch between them at the click of a key or mouse button.

Windows' advantage is that it can give the much speedier 386 a virtual memory interface to both graphics and non-graphics applications. Quite a few applications specifically written to follow *Windows'* rules have recently been announced. These programs all use *Windows'* device drivers. You and I benefit when it comes to configuring this software for the monitor, printers and plotters we already own. The chief disadvantage of *Windows* is that it's slow, it's a memory hog, and it doesn't operate in the 386's virtual mode.

386 OPERATING SYSTEMS

DOS Windowing Shells:

DesqView 1.3 / DesqView 2.0 /
EMS Emulator
QUARTERDECK OFFICE SYSTEMS
(213) 392-9851
150 Pico Boulevard,
Santa Monica CA 90405

PC/MS-DOS windowing environment. Faster than Windows, but handles only text-based applications on high-res displays. EMS Emulator causes DV to work in Virtual Mode of 386 with true multi-tasking. Upcoming version 2.0 works with both graphics and text on EGA (Feb. '87)

DOS clones:

Advanced DOS 286 (may be
re-named at release)
386 Operating Systems
MICROSOFT
Redmond, WA

Multi-tasking, multi-user version of DOS. Runs in protected mode only. Applications must be re-written to run. No release date or price has been officially announced

VM/386
SOFTGUARD SYSTEMS
(408) 970-9240
2840 San Tomas Expressway,
Suite 201
Santa Clara, CA 95051

DOS clone. Uses 1Mb RAM. Runs applications in 1Mb segments. Price and availability not yet announced

PC-MOS/386
THE SOFTWARE LINK
(404) 998-0700
8601 Dunwoody Place, Ste 632
Atlanta, GA 30338

DOS clone especially designed for 386. Runs in Virtual 386 mode. 25 simultaneous PC/MS-DOS applications can run as true multi-user, multi-tasking. Available Feb., 1987

386-specific UNIX systems that run DOS applications:

VP/ix
PHOENIX TECHNOLOGIES LTD.
617-769-7020
Department VP/ix
320 Norwood Park South,
Norwood, MA 02062

Combination of DOS and UNIX, V.3. UNIX kernel provides scheduling to both UNIX and DOS applications. Multiple DOS sessions can be run concurrently with conventional UNIX/XENIX applications

Microport System V.3 386 / DOS-Merge
MICROPORT SYSTEMS, INC.
(408) 438-8649
4200 Scotts Valley Drive
Scotts Valley, CA 95066

AT&T/Intel approved UNIX System V for 386. DOSMerge utility allows unlimited number of DOS applications to run under UNIX. System can be set up so that UNIX is invisible to user. Multi-tasking, multi-user (up to 25 terminals on 386AT). Run-time OS and DOS-Merge will sell for under $200. Complete system available mid-'87

Windows may also be incorporated into one or more of the upcoming versions of UNIX/Xenix for the 386 as a visual shell for running DOS applications as a task.

DesqView, a $99 windowing utility from Quarterdeck Systems, is another multi-tasking (meaning that various applications can be processing at the same time) windowing environment for the PC. Although present versions won't run EGA graphics programs, *DV* has three major advantages over *Windows:* the latest version supports "virtual 386 mode," which takes full advantage of the chip's speed and power without introducing a non-DOS interface to the user or requiring that applications be re-written. *DesqView* is much faster than *Windows*, and takes better advantage of the 386's speed. This is especially true when it comes to running multiple applications at the same time or when sending information to a printer or plotter. Finally, non-*Top View* applications can be made to run inside windows.

Version 1.3 of *DesqView* is being bundled with the Compaq 386 because it uses that machine's software EMS emulator to address the on-board 32-bit memory. Terry Meyers, the president of Quarterdeck, says that her company has written its own EMS emulator software so that non-Compaq 386 computers and expansion cards can also take advantage of V1.3 in the same way. PC Designs and Advanced Logic Research will bundle *DesqView* with their machines as a result.

Quarterdeck will release a graphical version of *DV* (2.0) in February. Version 2 can intermix text and graphic applications on high-resolution monitors without randomizing the screen or locking up the computer. This will make *DV* especially useful in the CADD and Desktop Publishing worlds.

Version 2 claims to be fully compatible with *TopView*, so that any application with a *TopView* driver will automatically take full advantage of the interface without any need for user configuration or .PIF files. Version 2 will sell for $129.95.

NEW OPERATING SYSTEMS

At least two Microsoft competitors claim to be ready to ship a 386 DOS early in 1987. Both SoftLink's PC-MOS386 and SoftGuard System's VM386 are fully compatible with existing PC-DOS programs. Microsoft has already stated that current applications will have to be totally re-written in order to run under the 5.0/ADOS that unlocks protected mode on the 286 and 386.

PC-MOS/386 does nothing to change the standard DOS interface and doesn't require the user (as opposed to the configurator) to learn anything new except how to switch applications. It purports to allow all existing PC/MS-DOS applications to run as true multi-user, multi-tasking functions. PC/MOS replaces DOS, at the same time taking full advantage of the 80386's capabilities. This OS can support 25 terminals from a single PC and can address the entire four gigabytes of memory available to the 386. Each user can run up to 25 programs at the same time. File and directory security have been implemented. SoftLink promises delivery of versions for one, five and 25 users in February 1987.

SoftGuard Systems VM/386 is a large piece (over 1Mb) of software that is itself a DOS application. Each application also has to have its own megabyte of RAM, so if you want to run three concurrent applications, you'll have to have 4Mb of RAM on-line. Expanded memory boards can't be used, but operations will go very quickly on systems that contain several megabytes of 32-bit extended memory.

UNIX & UNIX/DOS HYBRIDS

The 386 is often described as ideal for microcomputer-based UNIX systems. Several software houses have already announced UNIX systems, and several of these will run PC-DOS as a task.

Microport's pricing and total System V compatibility made it the talk of COMDEX. The company's System V/AT is true UNIX System V, retailing for a mere $160. It runs in protected mode on the 286 or 386 and supports the entire 16 Mb address space. It's possible to have up to 17 users per machine. Unlike most versions of UNIX, V/AT provides support for EGA and Hercules cards, as well as for the 80287 chip.

At COMDEX, Microport announced Release 3, an upgrade to System V. The "3" signifies full implementation for the 386. It fully supports transparent access to DOS systems. All disk drive formats for the AT (which means all current formats for 386-based machines) are compatible with the Microport UNIX. Disk-caching is implemented.

Microport developed System V.3 in cooperation with and under license from both AT&T and Intel, and guarantees it to meet all standards set by both companies for UNIX System V. Several vendors of "commodity" 386 machines plan to bundle Microport at no additional charge.

Because AT&T poured so much money into making UNIX software available for its PC6300+, it's said that there is more software available for the Microport system than for any other UNIX system. Given Microport's price advantage, there is plenty of incentive for developers to see that this continues to be true.

Phoenix Technologies' VP/ix is another combination of DOS and UNIX. It is a multi-tasking UNIX kernel (System 3) extended to provide interrupt-driven scheduling to both UNIX and DOS applications. According to Phoenix, multiple DOS sessions can be run concurrently with conventional UNIX/XENIX applications. VP/ix runs DOS applications in "Virtual 8086 mode" while the UNIX kernel runs in 386 mode. Even those DOS programs that are considered "ill behaved" will run and can be invoked from UNIX, and vice-versa. Furthermore, file transfer utilities between the operating systems are unnecessary. Each application runs in its own secure virtual address space.

You are not likely to find VP/ix at your local dealers, since it is being marketed primarily to hardware makers for inclusion with their units. In order to be compatible with applications that perform input and output through the ROM BIOS, a version of the Phoenix ROM/BIOS modified for maximum performance under VP/ix is included, along with MS-DOS 3.2.

Since some of the 386 computers depend on their own BIOS to handle the compatibility of their architecture, it's quite possible that VP/ix may not be workable as an off-the-shelf 386 DOS/UNIX. Applications running under VP/ix don't use any DOS device drivers. Software calls to printers, monitors and the like are all interrupted by VP/ix and handled through the UNIX drivers. Although this makes for uniform configuration, one wonders how well VP/ix will support some of the more esoteric monitors, printers and plotters.

It's reassuring to consider that Phoenix is the recognized industry leader in IBM/PC compatibility. On the other hand, their insistence on making VP/ix incompatible with any non-Phoenix BIOS may force some users into the Microport camp.

386 COMPUTERS

ATronics 386
ATronics INTERNATIONAL, INC.
(408) 943-6629
1830 McCandless Dr.
Milpitas CA 95035

Sample machine shown at Comdex. Standard AT-style case. Promises low-cost, high-performance. Available 1st qtr., '87

AT386
COMPUTER DYNAMICS, INC.
(512) 836-5707
2201 Donley Drive, Ste. 365
Austin TX 78758

This company says they will have the first 24 MHz machine, early '87.

386 file server
CORVUS SYSTEMS, INC.
(408) 559-7000
2100 Corvus Drive
San Jose CA 95124

Comes with 70Mb and 126Mb HD with 60Mb tape backup.

Kaypro 386i
KAYPRO
(619) 481-4300
533 Stevens Ave
Solana Beach, CA 92075

Looks like a 286i, but with a larger hard-disk, a 386 processor and some 32-bit slots. Runs at 16MHz and appears to be based on the Intel motherboard.

Laser 386
LASER DIGITAL COMPANY
(408) 747-1966
1024 Morse Ave.
Sunnyvale CA 94086

Also makes AT compatibles. Sells to OEMs and distributors.

Multitech 1100
MULTITECH ELECTRONICS
(408) 773-8400
1012 Stewart Drive,
Sunnyvale, CA 94086

Lists at $3,995. Std 25ms 40Mb HD. Pushing it as a network server. Up to 2Mb RAM on main board. 101 key keyboard. Option for 80 or 130Mb hard-disk. Claims to be slightly faster than Compaq (3400 dhrystones vs. 3000)

PC's Limited 386
PC'S LIMITED
(512) 339-6800
611 Headway Circle, Building 3,
Austin, TX 78754

Uniquely handsome AT case. Claimed faster than Compaq. PCL expects 24Mhz version to be available mid-'87. Price approx. $4,500. Available 1st quarter, '87

WYSEpc 386
WYSE TECHNOLOGY
(408) 433-1000
3571 N. First Street,
San Jose, CA 95134

Wyse demo'd this machine's potential as file server and engineering workstation, but didn't announce specs, availability or price. Expected to ship mid-'87

ZENITH DATA SYSTEMS
(312) 699-4800
1000 Milwaukee Ave.
Glenview IL 60025

Based on AT-compatible. Product will undoubtedly be first to hit gov't payrolls.

DOS PROGRAMS THAT RUN UNDER UNIX

AT&T has also spent a fortune promoting the development of software to run under UNIX V/AT for its 6300+ and 3B series of computers. As a result, there's quite a bit of application software available. Even DOS favorites like *WordPerfect*, *Framework* and *Smart* are available in UNIX versions. The Santa Cruz Operation has even gone so far as to write clones of *Lotus 1-2-3* and *dBASE III* for XENIX. All of this software will run unmodified on the present generation of 386 computers, either under Microsoft XENIX or Microport UNIX. XENIX presently takes advantage of only 16Mb of RAM under protected mode. Few users would implement more than that anyway, given the present cost of chips.

THE AT BECOMES A MINI

You can migrate upward to the 386 via one of three paths:

- Buy a 386 computer.
- Plug an accelerator card into an AT or compatible.
- Replace the motherboard in your XT or AT.

All of the machines thus far announced (or hinted at) are fully AT-compatible. Most machines bear a strong exterior resemblance to the IBM/AT; many are nearly identical. Motherboard layout seems to be following one of three standards, all of them XT/AT compatible.

Some manufacturers are following the board design provided by Intel, others the design approved by the PC Extended Technology Group (42 manufacturers originally brought together by Phoenix Technologies to formulate an expanded AT bus to incorporate the 386 and 32-bit slots). Both of these designs produce AT-form motherboards.

The third group of motherboards generally use the Chips & Technology 386 Chipset (seven chips) which reduces the chip count to about 30 and makes for boards small enough to slip into an XT case. All of these motherboards have at least one 32-bit slot, at least a couple of 16-bit AT slots and two or more 8-bit PC/XT slots.

32-bit slot designs fall into three categories as well: Intel, Phoenix, and proprietary. Most designs employ some sort of cache memory scheme to speed up the 386's correspondence with the slower devices running off the 8- and 16-bit slots. Every manufacturer seems to be employing a different scheme, so we'll have to wait for individual benchmarking by independent sources to see which ones are most effective.

The most talked-about 386 machine is Compaq's DeskPro 386. Compaq has managed to attain an excellent reputation for quality and engineering and quickly became the #1 maker of PC compatibles. Tired of being a "me too" company, Compaq announced its intention to set the standard for 386 machines with this one. Since the machine was introduced, Compaq says it has been unable to produce them fast enough to keep up with the orders. Compaq wrote its own 386 ROM BIOS, designed its own bus, and uses a unique RAM scheme that treats 32-bit memory as Lotus/Intel/Microsoft expanded memory.

Advanced Logic Research announced its 386 computer at about the same time as Compaq, but waited for COMDEX to show it to dealers. ALR claims that its machine is slightly faster than Compaq's. It comes with a Phoenix 386 ROM/BIOS and sticks to the motherboard design proposed by the PC Extended Technology group. The $7,000 machine includes a 40Mb hard disk EGA card and EGA monitor. ALR is aiming its product at the advanced graphics and CADD marketplace.

PC's Limited's 386 is housed in the same cases as the Texas mail order firm's latest model ATs. You have a choice of a smaller footprint machine capable of housing three half-height drives or the larger, standard layout AT. The front panel has been distinctively re-styled, making this one of the handsomest units in the show.

PC Magazine benchmarks rate this a significantly speedier machine than the Compaq. The clock presently runs at 16MHz, but PCL claims it will be running at 24MHz within the next few months and can be upgraded when the required chips become available. Like the RAM Systems 386 motherboard, this one is based on Chips and Technologies' AT chipset and measures only 9x13 inches. Pure static RAM chips are used for 32-bit memory, insuring compatibility with 24MHz processors running at 24MHz and zero wait states.

PC's Limited will offer a 150Mb hard drive with an average access time of 16ms! It's not the cheapest of the 386 machines, but company spokesmen expected it to sell for around $4,500—several thousand dollars less than Compaq's.

The features profiled in the three machines above are typical of those found elsewhere at COMDEX. Zenith, Wyse, PCDesigns, ATronics, Computer Dynamics, Kaypro, and Laser Digital all showed 386 systems running at 16MHz with the same styling as their AT-compatibles. Multitech, one of the largest clone makers, claimed to have the lowest-priced 386 at $3,995, including a very fast (25ms) 40Mb disk and a 101 keyboard. Multitech has been blessed with favorable reviews for its AT-compatible, so we can expect this one to be a good value. What makes it even more attractive is the versatility of the expansion slot layout: three 32-bit (most machines had only one), three 16-bit and two 8-bit. Corvus Systems, famous for its PC networks, wins the award for the most unique machine with its 10-slot upright 386 file server.

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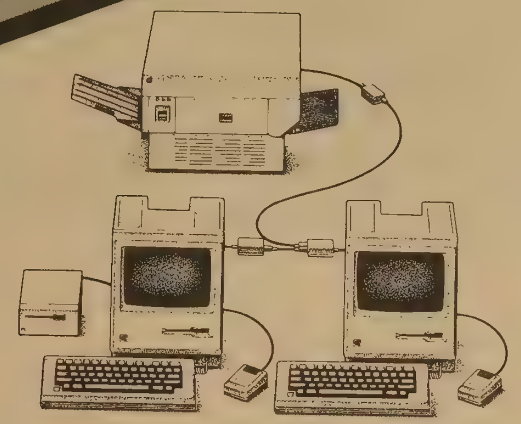

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you already have (and the money you spent on it), you can upgrade it instead of replacing it. Just about every marketer of PC expansion cards has introduced a 386 plug-in accelerator.

If any company ought to know how to make a fully compatible 386 accelerator card, it's Intel. After all, they designed the chip. The Inboard 286 AT is said to operate at twice the speed of an 8MHz AT. The board can be used only in a 16-bit AT bus slot and is fully compatible with all of Intel's AboveBoard memory products. That should mean that it's also compatible with other expanded memory cards that meet the Lotus/Intel/Microsoft Expanded Memory Specification (LIM/EMS). A high speed memory cache is included on the board so that non 32-bit memory can be accessed without a speed penalty. An optional 10MHz 80287 math coprocessor module plugs into the onboard socket for the eventual 80387 coprocessor. It is possible to add up to 3Mb of 32-bit memory to the Inboard by plugging in a 2Mb piggyback board. The basic above board retails for $2,495 with 1Mb RAM. The 2Mb piggyback board retails for $1,145. The 10MHz 80287 math coprocessor retails for $495.

The least expensive accelerator award goes to Orchid Technologies. That's even better news given Orchid's reputation for making the most problem-free 286 "turbos." The Jet 386 with 1Mb RAM will retail for $1,495, but is available at an introductory price of $1199. Jet may be an appropriate name—it has 64K of cache memory on board to speed the transfer of memory from the 16-bit bus.

Orchid says the Jet runs at three times the speed of the AT and is 100% compatible with all existing PC software, as well as any forthcoming 286 or 386 software. The Jet can be used only in ATs and compatibles, but will work in any slot. You leave the 80286 in your system and can easily switch between the 386 and the 286. Orchid claims complete compatibility with networks, disk controllers and high-resolution color graphics cards. Although there's no provision for an 80387 math coprocessor, you can use a 12MHz 80287 to speed along *Lotus* and *AutoCAD*.

Sigma Designs showed an accelerator card that will allow you to piggy-back up to 16Mb of 32-bit RAM. Most cards max-out at 3Mb. Quadram and Applied Reasoning showed 386 cards that work in the XT. AR's card doesn't require you to pull your 286 and replace it with a cable connector, as most of the others do.

Although every card manufacturer claims that his accelerator card is 100% free of incompatibilities, many of us remember the poor reputation of many 286 cards for the PC and XT. RAM Systems offers an alternative for those of us gripped by accelerator paranoia.

The Chips & Technologies AT chipset allows this 386 motherboard to be small enough to fit into an XT case. I replaced the motherboard in my Black Ship AT clone and had the pleasure of watching this article scroll from top to bottom at lightning speed as I was editing it.

If you can cost-justify the benefits of the 386's added speed and vast memory-addressability, there's no reason not to buy now

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Jet 386
ORCHID TECHNOLOGY
(415) 490-8586
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Another board said to work in an XT

CPU 386; TurboCache 386
SIGMA DESIGNS
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CPU386 - Requires 16-bit AT expansion slot. Piggyback memory up to 16Mb. Comes with serial and parallel ports, clock/calendar, and its own DMA, interrupt and keyboard controllers. Cables to 286 socket, replacing the AT's CPU

TurboCache 386 - Doesn't replace the 286, just plugs into a 16-bit slot in the AT. Can be expanded to 4Mb of 32-bit memory with piggyback boards. Uses 32K memory cache expandable to 128K

Next month, after more thorough testing, we'll do a hands-on feature on building your own 386 mini. For now, suffice it to say that replacing the board (which I'd never done before, although I've had plenty of experience swapping cards and drives) took less than two hours. Everything that was plugged into my old motherboard (AST RAMPage!, Hercules card, Paradise AutoSwitch EGA, Western Digital controller, DataDesk keyboard, Logitech C7+ mouse) works just fine. At $1,995, RAM is offering a path to a true 386 machine for about the same price as most of the accelerator cards.

One of the reasons most everything seems to work with RAM's motherboard is that the 386 runs at 12MHz clock speed instead of the usual16. RAM then accelerates performance with an especially efficient bus design that runs at 10 MHz.

PERIPHERAL ADVICE

If you are working with the 16MHz motherboards that all of the other manufacturers are using, you will need to work with components that can keep up. Memory chips on expanded memory cards, for example, should be of the 120ns (or faster) variety. Slower chips can burn out, even if they appear to work for a while. If you're planning to run one of the new 386 multi-tasking operating systems, you will need to make sure that the computer or card can be upgraded to at least 4 Mb of 32-bit RAM.

These machines are so new that no one has had time to adequately test all the existing peripherals for compatibility. You'd be smart to take your old cards to a dealer for testing before planning to install them in a 386.

The 386 won't make PC or AT accessories run any faster. If you want to maximize overall performance, look for the fastest add-ons. First, buy the board maker's 32-bit memory instead of EMS cards. Second, buy the fastest hard disk you can afford. Apparently, the 386 standard for hard disks will move up to 40Mbytes, with average access time speeded up to less than 30 milliseconds. A horde of very large capacity hard disks (80-160Mb) with access times ranging from 18-28ms (about 2X the speed of an AT disk) were announced at COMDEX. Finally, look for graphics cards that feature either TI 34010 or Intel 82786 graphics co-processors. Slow EGA cards will molassify everything that goes to your monitor.

LOOKING TO THE FUTURE

You ain't seen nothin' yet. Within the next year and half, even faster and more powerful PC-compatible systems will come along—and they may be even cheaper. Although present 386 machines run two to three times the speed of an AT, future boxes can be expected to be as much as ten times faster. There are several reasons for this. Intel has announced that 24MHz versions of the chip will be ready for market in early '87. Operating systems and software that maximize the advantages of the 386 will run much faster. New bus designs can be made to more efficiently utilize the 32-bit data path. Finally, peripherals that are designed for the 32-bit bus will greatly improve the throughput from disk drives, graphics displays and other add-ons.

We'll see a lot more innovation, too. DataVue (a division of Quadram) announced a PC add-on box, the Super Micro 150, and the Series 30 Personal Computer. The System 150 operates at up to 24mips. That's *eight times faster* than the current crop of 386s. The 150 box attaches to the Series 30 replacement board for PC motherboard. Or you can simply buy a Series 30 PC-compatible from Datavue.

Meantime, if you can cost-justify the benefits of the 386's added speed and vast memory-addressability, there's no reason not to buy now. Operating systems like Microport's UNIX V.3 and SoftGuard's VM/386 are going to be able to deliver the multi-tasking, multi-user capabilities we want. And they don't stand in the way of using whatever Microsoft or IBM comes up with later.

(By the way, Intel is currently working on the 486, and it could be here within the next 18 months. . .) ☐

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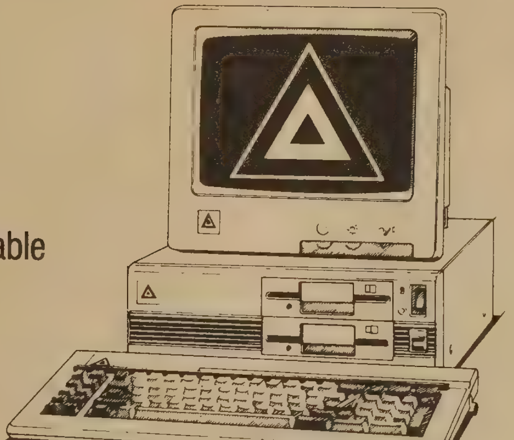

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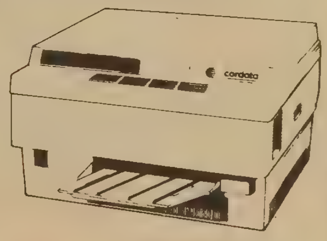

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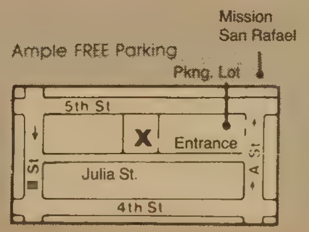


The Santa Cruz Operation:

Taking Care Of Business With XENIX

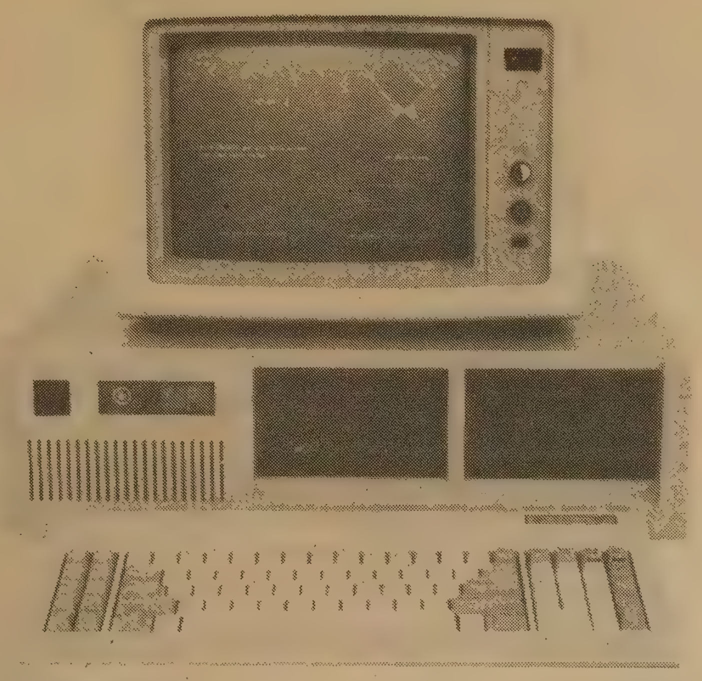
By Bennett Falk and Mary Eisenhart

Photos by Marc Franklin

1987 may well be the year in which AT&T's UNIX operating system comes into its own in the corporate work environment. An increasing number of businesses are discovering the merits of multi-user systems in which resources are shared among a number of PC workstations. Further, as fast, powerful machines based on the 80386 microprocessor chip become readily available, the absence of an MS-DOS that begins to tap the chip's power makes UNIX an attractive alternative. Another significant advantage of this multi-user, multi-tasking operating system is that it's relatively hardware-independent and runs on a wide variety of micro- and minicomputers, thereby protecting a company's software investment as it upgrades to new generations of equipment.

The predominant UNIX in the business world is XENIX, a value-added version licensed from AT&T by Microsoft. Versions exist for many computers, most notably the IBM PC/XT/AT and compatibles.

In order to market XENIX effectively, Microsoft devised the concept of



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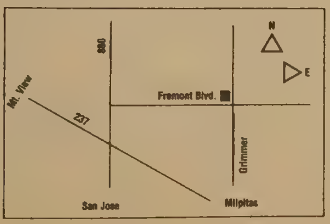

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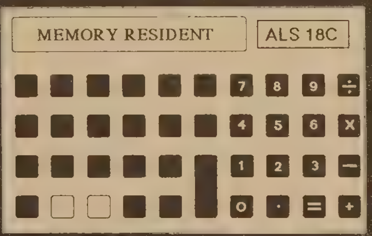

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Doug Michels: "It's really an iterative process. Every release we make a long list of things we'd like to do—the first thing on the list is always 'What is causing the users the most trouble?' If we solve a problem, if we cut down one phone call per user, that's a huge thing."

"alternate sources" for XENIX, by which smaller companies would join forces with Microsoft, continuing development of the operating system itself and of the application packages which would provide specific solutions. These companies would also provide all-important support services to users of XENIX-based products. There were two such companies worldwide: Logica, based in London, and the Santa Cruz Operation, based in Santa Cruz, California. In November 1986, SCO and Logica joined forces in SCO Limited, creating a unified alternate source for XENIX worldwide.

Founded in 1978 by Larry Michels and his son Doug as a consulting firm, SCO has been developing and marketing systems software for the UNIX environment since 1979. It offers a full range of support services and software packages for business environments. SCO's software offerings include SCO XENIX System V, a commercially enhanced version of the UNIX System V licensed from AT&T; *Lyrix*, a user-configurable word processing system; *SCO-Professional*, a UNIX/XENIX based *Lotus 1-2-3* workalike; *SCO FoxBASE* and *FoxBASE Plus*, workalikes for *dBASE II* and *dBASE III*; SCO UniPATH SNA-3270, mainframe communications gateways which allow XENIX systems to operate on IBM SNA networks; SCO XENIX-Net, a Local Area Network system for integrating XENIX/DOS environments, and a wide range of other applications.

With its extensive repertoire of products and services, SCO seems ideally positioned to take advantage of the arrival of new, powerful microcomputers to broaden the acceptance of UNIX in the corporate world. Meanwhile, however, new contenders are eyeing this lucrative market and coming out with their own licensed versions of UNIX—the notable example being Microport, which offers a two-user bare-bones PC-based UNIX operating system for a mere $169, a package some manufacturers are bundling with their 386 machines.

When we visited the SCO offices recently, the senior and junior Michels (who now hold the titles of president and vice president of research and development respectively) spoke about SCO, its role in the marketplace, and how it plans to face future challenges.

How did you come to start SCO?

Larry Michels: The business started after a number of years I spent at TRW. I watched them struggle with how to move from a low technology company—auto parts, things like that—to a high technology business. The fact is, they bought some large number of companies, and failed with each one they bought.

There were a number of reasons. One was that the culture would only accept certain kinds of people. They weren't willing to change to the people that they had to. Nor were they willing to change the management practices they had. Nor were they willing to change the budget or any other cycles that they had.

These were all high-tech businesses—point-of-sale, bank teller machines, credit authorization machines. One other aspect that TRW didn't understand was that these businesses were computer businesses. They were software businesses. They thought they were buying a telephony business, they thought that telephony was telephony, but they really were computers. Unless you approached them as being computer businesses, you didn't end up with anything.

Characteristic of the telephone business over a long period of time is that telephones don't change fast because tariffs don't change. However, introduce electronics and you introduce the ability to change faster, and suddenly you find yourself in deregulated environments where tariffs are no longer an issue. Speed was important, and yet the whole structure of the business did not allow for speed. Fundamentally they failed because they could not understand the cultures they were going into.

Well, Doug and I took that here, and we thought, if TRW was having so much trouble, it was probably an interesting business, being able to offer what we had learned in how you go about making these transitions. And so we hung up a shingle and started to offer these services.

We found out almost immediately that it was a futile business. Why? Because invariably the price of success was new management techniques and new management. And so the people that hired you, you had to go back to them and say "the way you succeed is change your staffing, change your approach, change your goals, change your methods." And they said "Thank you," and you were never invited back a second time. (laughs)

You cannot run a consulting business by doing that. So we recognized that working with companies and helping them recognize the disasters they were headed for was almost immaterial.

We had realized, from some of the work we had done, the value of portability—that you had to have the freedom to move through generations of technology without destroying the investment you had made in software. We began to recognize that UNIX, which we had used as a tool internally, was probably the coming vehicle. We also recognized the tremendous opportunity, because AT&T had this operating system and didn't quite understand what to do with it. This was about 1981.

System 7 was the first UNIX licensing introduced with the ability to sell inexpensive binary licenses. Prior to that all you could do was buy source licenses, so the price of the machines was many thousands of dollars.

This was a tremendous buy. This was tremendous power. You could take inexpensive PDP-11 machines, put UNIX on them, and just about run circles around anything that was out there. We recognized that that was an emerging market, and that that was probably a place to invest and to start building talent. And then along came Microsoft.

Microsoft did something fairly bold. They said "Here is an enormous opportunity"—again, because AT&T was really not producing a commercial product. Microsoft's grand plan was to take every major microprocessor and make a value-added form of UNIX called XENIX available for it. Microsoft, however, ran into an immediate problem. They were not set up to deliver support and hand-holding. They are in a business that's largely based on being a commodity supplier—here is the product, pay us the money, then go off and make it work.

Not the kind of thing you can do with a UNIX operating system.

Not and succeed, anyway. (laughs) So they in effect hatched the idea—and it was a very good idea—the idea of the second source. They would set up x number of small companies that would, in effect, provide the kind of support and service that the larger companies needed. They set up a revenue-sharing basis so these companies would get a piece of the action, so to speak.

What finally happened is that there turned out to be two second sources. There was a company in England called Logica, and a company in the states called SCO. The company in England is the one we just merged with, and plan to use that to expand our capabilities.

SCO is a very unique organization. It is tuned to bring a high degree of value-added to the multi-user market. The high-end PCs—the 286 machines—are practically a revolutionary concept. They are metaphors, if you will, the same kind of metaphor that the Model T Ford was. The Model T Ford came along as not the pioneer of automobiles but the pioneer of transportation. Suddenly we had a low-cost, reliable transportation device for the masses. We didn't have to live next to where we worked, we built garages, roads, planned our cities differently, and the world changed around us.

If you start thinking of the PC in a similar vein, that it is a very high power, low-cost, reliable source of computing power; if you put to it the kind of tools that SCO is pushing, namely the operating system and the various applications, tools that we're adding to it, and turn that loose with people who can adapt these systems to meet the ordinary needs of business—the needs to communicate, the needs to gather data, present data, where you have a group of people that have to work together and share resources or report to a mainframe or another large computer someplace—suddenly you can do this for sums of money around $10,000. You don't need a special environment, you don't need an expensive service contract.

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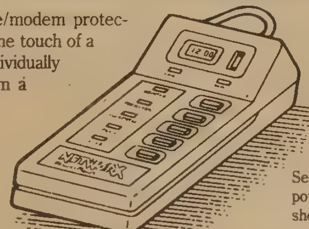

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have the freedom to evolve the technology. In the same way that new cameras use existing films, new machines will be using the existing base of software. And the repercussions of that on society are going to be enormous.

The present computer industry is not established to deliver that kind of capability. Distribution houses tend to be largely storage, where they turn over software, they turn over hardware. A company like SCO has the resources, the engineering, the support, the commitment to take these products, work with the various Value Added Resellers and system developers to produce low-cost, reliable multi-user systems. It's a whole new concept.

The English acquisition is so important because it fits the same pattern. The intent was not to set up an English subsidiary. The intent was to extend the types of services we were able to offer here on an international basis, to the multinationals, to people who care about how products move across world boundaries.

Obviously you expect that there'll be a pretty large base of high-end PCs in Europe.

Step back and take a look at the PC market. At no time are we trying to say that multi-user systems will dominate this market. A year ago most pundits thought that if the market ever got as high as 10% UNIX, that that would be masterful. The fact is, on the high end of the machines, the numbers are way over 10%. I think at the most, though, we're talking about markets that are maybe 20-25% at best. There's maybe three DOS machines for every one of these machines.

The people that are moving machines in these markets—certainly ITT—are being very successful. The high-end machines are moving in Europe. Apricot has a 286 machine. Olivetti will have a 286 machine. I think we're going to see more and more.

Doug Michels: The thing about Europe is that the market has different players. The only US players other than IBM that are really strong worldwide are people like ITT, H-P, NCR, and they're all very strong on XENIX. One of the reasons is that the demand for XENIX is stronger outside the US.

Why?

DM: It's somewhat historical. The international market is really more adventurous. Common wisdom is that Europe is one to three years behind the US, and they typically are. The AT stuff is hitting its stride now, rather than two years ago. But in terms of the Value Added Reseller component of the market, they're more adventurous.

The reason is that they don't buy the IBM answer as the only answer. The saying in the US is "nobody ever got fired for picking IBM." That's not a saying in Europe.

Leonard Tramiel at Atari says that "nobody ever got fired for buying IBM" has never been translated into German, and Atari's very happy about it...

DM: (laughs) He's absolutely correct. In Europe they worry a lot more about price/performance; they don't spend money as freely on data processing. They were pushing multi-user CP/M systems. DRI was much more successful with Concurrent CP/M in Europe by an order of magnitude. In terms of the small multi-user system, Concurrent CP/M is the major competitor in Europe. XENIX is starting to be felt very strongly now, but those people tend to look for cost-effective solutions.

In Europe you'll see very strong commitment by the independent software vendors to Oasis, Concurrent CP/M, all of those low-end, original multi-user systems. They all have strong followings and they're still going strong. There are new machines being introduced this year with Concurrent CP/M as their operating system.

The loyalty isn't to IBM, the loyalty of the end user is to the local VAR. The local VAR there is some guy who's been around for 100 years; whether he was selling adding machines or whatever, that company has a reputation, and the local end users have the opinion that if they buy from this guy who's been in their town for 100 years, he's not going to let them down. He's got too much at stake. They'd rather trust that guy than trust IBM to deliver them a solution that would be stood behind for years to come.

And it's these guys, the local VARs, that are beginning to see XENIX as a vehicle for building cost-effective solutions. In the last six months we've seen International take off at something like twice the growth rate of every other market sector we're in. We're just seeing the tip of the iceberg.

Those guys are beginning to say "XENIX on a 286, in price, performance, reliability and everything else, is the best solution we can find right now." They'll buy the Olivetti or the Apricot or the H-P or whatever 286 box, and get XENIX on it and get the software and deliver it to the end user. That's going to be a solution that's solid, that's going to be around for years to come, it's going to be somewhat hardware-independent.

We think it's a market that doesn't go away easily. They've got a history of loyalty, a history of taking longer to make the decision and then really committing to it and investing in it.

LM: It's not only Europe—Australia and New Zealand are also very high penetration. We haven't seen much from the Far East.

DM: South America's beginning to go. The funny thing is, it's really country by country. In the smaller countries, there's really only one or two key VARs, and they were DEC for awhile, then they were Data General for awhile, and then they got into CP/M and Oasis, and what happens in each country is that they gradually realize about XENIX. Then they realize that SCO is the right place to get the XENIX. So we've just had this big explosion in Venezuela...because *somehow the message got out!* (laughs) Because somebody customized the word processor and did the things to make it acceptable in that market.

Do you sell directly to end users or operate exclusively through your dealer channel?

DM: We do sell direct to end users. We sell at list price directly to end users. We try not to compete with our dealers, so we don't discount, we don't do anything to attract that business, but we take it. We always tell them, hey, there's a dealer near you. But it's still a young market; the dealer coverage is getting pretty good now, but when we started it wasn't. So if somebody calls up with an American Express card and wants to buy something, we'll sell it.

Do you offer support directly to end users, or do you usually work through your dealers?

DM: In the US, we don't expect a dealer or one of the smaller VARs to fully support all of our products. Every one of our boxes in the United States goes out with a 30-day hotline warranty, an 800 number to the end user. And it's fairly inexpensive to continue that as a subscription service.

In Europe we do expect that the dealers and distributors are capable of providing end user support. Because of the language and time zones, we always try to work through the dealers in the rest of the world.

In the US we talk to a substantial number of individuals, and that's good because it feeds back directly into our organization. Every release we think "What were the ten most expensive things to support in the release before?" We have this incredible vested interest in making those ten things either go away or be easier to support.

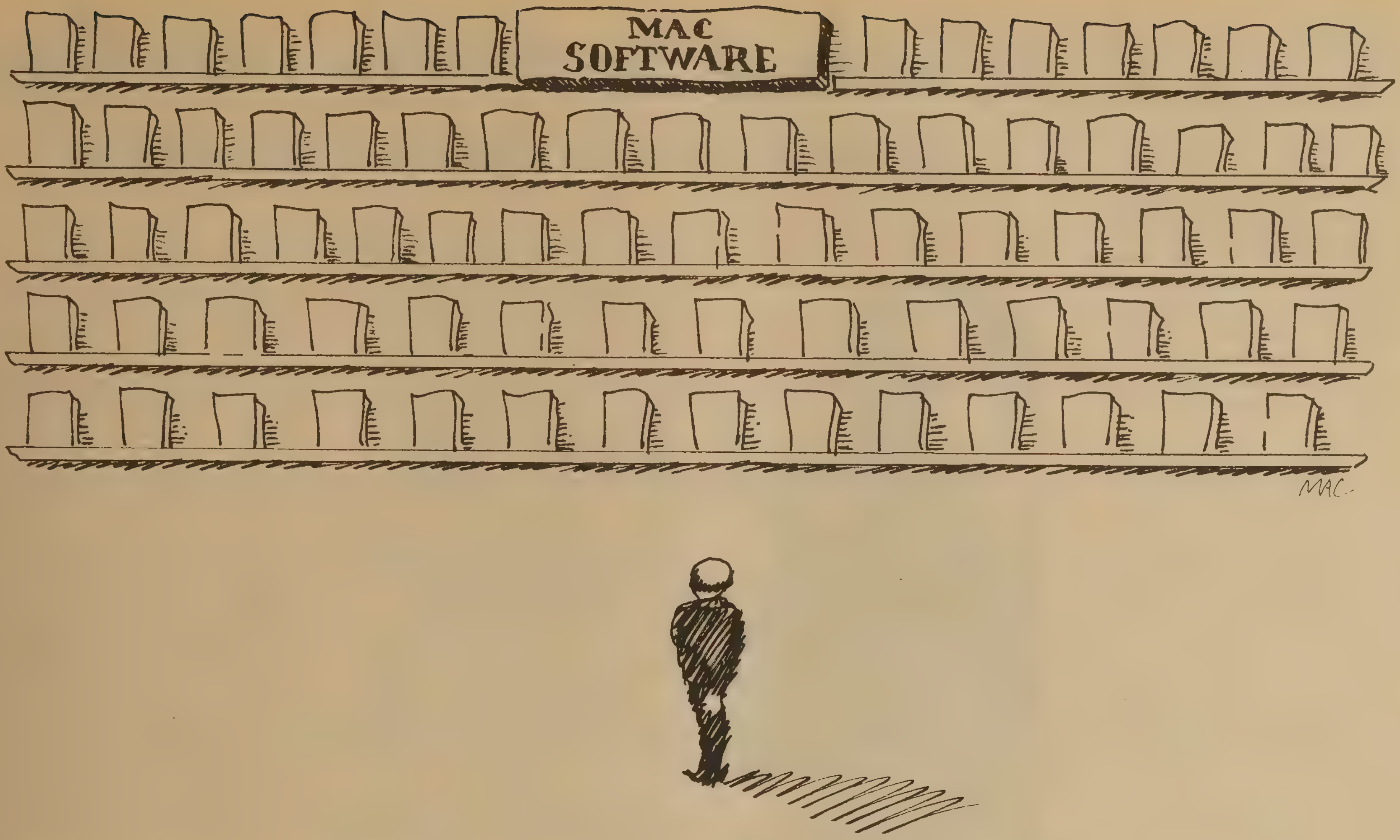
Installations are a huge percentage. In the early days we made it too hard. The PC market is an awesome thing—these machines that are supposed to be clones are really only almost-clones. We've learned the hard way that clones aren't clones, every one of them has its own thing. So now if there's anything we can do to make a product adapt itself, we'll do it.

One of the amazing things that we've accomplished with XENIX is that at this point you take it out of the box and load it onto anything that vaguely resembles an AT, and it just sort of gloms in there and pokes around and says, oh yeah, that's a Hercules monitor and an Arkive tape drive, and when you boot up XENIX it comes up and it says, you've got a Hercules monitor and an Arkive tape drive and a parallel port and two serial ports and eight megabytes of memory ...

Larry Michels:
"It isn't a matter of moving in a machine to make an existing business easier to run, but rather designing businesses that work around these machines. You're not selling the machine, you're selling a solution, the answer to a problem."

LM: The investment just keeps adding to it. It's one of the nice things about the market, because you can pioneer the market, develop the market, and get the benefits. It becomes very difficult for somebody else to try and jump in.

Between development work, the operating system, the communication level, the human interface level, the database level—it's a hell of a



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team that makes this all work. That's why the UK acquisition was so beautiful, because it gave us the only remaining capability out there that could have fit like a glove.

Do you develop all your software in-house?

LM: We use combinations. Some of it's developed in-house, some of it is team developed. More and more software developers are understanding that they can't outreach this market. It's sort of like being the producer of the show and the best way to get marketing is to go to CBS. So you often get the opportunity of picking up products.

The question then is, does the product meet our own requirements, does it do what we want it to do? It generally takes further investment on our part. The product we deliver has the flavor and look of an SCO product. Very often we do the documentation for it, the handbooks and user manuals.

How is the XENIX product itself continuing its development? Is most of the work going on here or at Microsoft?

DM: We've been doing joint development on XENIX with Microsoft since the very first version of XENIX on the PDP-11 five years ago. Over the history of XENIX we've probably done 50% of all the work. If you combine what we've done and what the group we've acquired in England has done, it's probably higher than that.

We build the product we ship. We give whatever we did back to Microsoft, and it generally ends up in the next major XENIX release.

How do you decide what you need to develop?

DM: We talk to our support team, we talk to our VARs, we talk to our OEM sales department, we hold lots of meetings and write lots of specs. We're on the verge of releasing a fairly major release in January; it's got a heavy emphasis on international features like the 8-bit character sets. It's got a heavy emphasis on supporting some new devices—there's a big push for tape devices which were never officially supported before. The 150 megabyte disk floppies are really difficult media to do daily backups on. So the market said, we want tape, and we said, ok, it's getting too confusing, there's too many vendors out there with dissimilar tape drivers, so let's standardize that.

So it's really an iterative process. Every release we make a long list of the things we'd like to do, then we prioritize it and decide how long we've got till we're going to put out the next release and how far down the list we can get. But the first thing on the list is always "What is causing the users the most trouble? Where is the support dollar going?" Because unlike most companies, we talk to the end users. It's an immediate

Debunking The DOS Vs. UNIX Myth And Other Popular Fallacies

Bruce Steinberg: "UNIX is not out to do in DOS. It's there to work with it. XENIX and DOS have always coexisted."

"There's a few issues that I think of in terms of *National Enquirer* headlines," remarks Bruce Steinberg, SCO's director of marketing communications. "'Who's Going To Win The Battle Of DOS Vs. UNIX?' 'Who's Going To Win The Battle Of Multi-User Vs. LAN?' 'Who's Going To Win The Battle Of Mainframe Vs. PC?' It's almost an editorial lead that says if there's a winner there's got to be a loser.

"There doesn't have to be a loser if somebody wins. If somebody wins, somebody else wins too. That's good negotiation, it's good technology. The only thing that loses is inefficiency, low productivity. UNIX is not out to do in DOS. It's there to work with it. XENIX and DOS have always coexisted. They have a common genealogy, they have a common vendor in Microsoft."

It's Steinberg's appointed task to present SCO's products and services to the business community. He's the creator of the company's visually arresting ads, with striking artwork showing XENIX rising over the earth or freeway signs pointing to UNIX Solutions. And he's the first to point out that SCO is at least as much a philosophy as a product line. "The results of buying an operating system, and the results of buying into a long-term working relationship with a software vendor, are almost indeterminate up front. It's an act of faith, and faith coupled with reason is what's going to get over in the long run, in terms of working with people. We've always paid attention to support. You let people know that you're aware—we know what you need, and now we're going to provide it."

Presenting the true effectiveness and versatility of SCO's XENIX frequently involves debunking commonly-held myths and rivalries, then pointing out that it's possible to enjoy the best of several worlds while getting the job done efficiently. "Multi-user and LAN is a classic dichotomy," he says. "You have to pick one or the other. You either have to go multiuser, and here's all the good news and the bad news about that, or you've got to go networking, and here's all the good news and the bad news about that. I say, wait a minute, no. With XENIX-Net, you don't have to make that choice. You can have networking of multi-user systems and get the best of both without sacrificing the strengths of either.

"Same thing with PC and mainframe. Somebody comes up with the idea of an SNA 3270 PC—you can put PCs on desks and you can give them SNA protocol and they can talk to mainframes. We have this facility called reverse passthrough on our SNA product, where a mainframe administrator can make his mainframe look and act like a PC for the purpose of communicating with PCs. And conversely we have a programmatic interface on SNA that can make a PC look and act like a mainframe."

SCO has recently ported the Microsoft C compiler, *SCO Professional* (a XENIX-based 1-2-3 workalike) and the *Lyrix* word processor to the VAX environment—prompting Steinberg to coin the slogan "Take your VAX where no VAX has gone before. . ."

"Rather than say it's Us Vs. Them, I look at it that we're all in this together. Because it's ridiculous—the definitions break down anyway. The 386 machine has the power that mainframes had a couple of years ago. Sitting on your desk—virtual memory, four-gigabyte linear address space—where do the definitions stop and start anymore? It's all about computers—it's all about bits and bytes."

As the distinctions between machine types continues to blur, XENIX offers the significant advantage of being able to tap the increased power of the new micros far more effectively than any current version of DOS. "You can take 286 code and run it on a 386 machine straight out of the box and it'll run three or four times faster. You can take a 386 machine, run 286 XENIX and 286 applications, and they'll run three or four times faster. You can take a 386, run 286 XENIX on it, and compile the 286 applications for the 386, and run three times faster again. And if you take those 386 recompiled apps, and run them on a 386 kernel on a 386 machine, you're talking 30 times faster. And we've guaranteed this upward compatibility so that you'll always preserve your investment from where you're coming from."

However, says Steinberg, the primary issue is less a matter of one operating system being superior to the other than of their ability to work together to enhance productivity. He points out, for instance, that DOS-based vertical market applications will probably continue to dominate their particular arenas for some time to come, and the ability of XENIX to provide multiuser features without sacrificing DOS capability is a significant benefit. Then there's the undeniable advantage that an entry-level PC system can evolve as a company's needs change. "There's a tenuous balance between the need for PCs to be perceived as DOS, so there's an entry-level position, but also as a good XENIX machine, if you want that capability. If you're enough on the leading edge to understand what XENIX can do for you, you have it primarily as a XENIX machine, but it'll still run DOS programs.

"Particularly the 386 was just made for UNIX—it's like an engine that's so powerful that you're not even beginning to open it up with DOS. It's kind of like having a Lamborghini and going to the supermarket. Occasionally you have to go to the supermarket. You'd be in trouble if you had a car that stalled if you had to drive it under 70 miles an hour. A good car that does 170 should be able to get you across town." (The Santa Cruz Operation, P.O. Box 1900, Santa Cruz, CA 95061, 408/425-7222)

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payback—if we solve a problem, if we cut down one phone call per user, that's a huge thing. So if it means improve the documentation, if it means improve the installation procedure, if it makes the product more automatic in recognizing the machine it was just poured into, then that's all stuff we have to do.

LM: We also like to listen to the propositions that there is this enormous market here if the product had this one additional feature. . .(laughs) So we sometimes deal with the one additional feature.

As a matter of style, if we want XENIX to lead, and we want SCO to lead, there's a strong concern about how you interface with the rest of the industry. We try to keep as open a door as we can to the independent hardware vendor, to help them interface their hardware to our products. Some is done for free, some is done for charge, it depends on the importance of the product and the amount of help that's required.

The same thing is true of the independent software vendor, even to the extent of competitive products. There may be competitive applications out there, that they need help in interfacing to our operating system. And it's perfectly legitimate, you just have to do that, it's part of the game. The customer wants their product, but they still want our operating system. And so you have to step away from your own products, and offer that kind of freedom.

DM: Also, as we get into things like XENIX-Net, which is bringing together DOS and XENIX systems, there's a lot of players. We have active relationships with Excelan, 3Com, etc., to make the various networking systems compatible with XENIX. We're getting very good cooperation because the networking vendors realize that XENIX is important in the networking strategy. They realize that if SCO says that theirs is one of the five cards that works in a XENIX-DOS mixed environment, that's good. And so they're willing to send engineers over here to live with us and work cooperatively on making the product fit their architecture as well as ours.

We've had a lot of pressure from the federal market, which needs removable media for security reasons. We just announced at UNIX Expo a relationship with Iomega to support and actually deliver XENIX on a cartridge. You can buy a 20 megabyte cartridge which has XENIX pre-installed, you pop it in and you're running XENIX. Iomega made special arrangements for us to get cartridges and duplicating equipment so that we could offer XENIX on a cartridge.

So we're constantly working, listening, entertaining these propositions. The discussions with Iomega have gone on for a year and a half to finally get to the point of being able to ship a cartridge with XENIX.

So the cartridge would be installed in a regular DOS machine and you could just switch between operating systems?

DM: Sure. You put in a XENIX cartridge, you're running XENIX. You put in a DOS cartridge and you're running DOS. And if you want to take the thing and lock it in the vault, because it's got secure data on it, you can take it to the vault and lock it—which is required by law on a lot of projects. It's either lock the whole AT in the vault or lock the cartridge. So the cartridge looks like a good solution.

Are we likely to see XENIX on a CD-ROM anytime in the near future?

DM: I wouldn't look to see XENIX on the ROM. I would look to see XENIX able to access the ROMs. I think that because of XENIX's natural role as a server in a network, that if I want to put a gigabyte of online data available to 100 DOS machines and terminals and telephone lines, that the obvious place to stick that is on a XENIX box. I expect that we'll see device drivers that talk to CD-ROMs.

There wouldn't be any great advantage to putting XENIX on the ROM. The CD-ROMs are way too slow to run XENIX effectively. But to access the databases that will begin to be available, it makes perfect sense.

We've started to explore that. We went to the first CD-ROM conference, and we're trying to understand where that's going. But XENIX really needs read-write capability.

What kind of doors do you see the 386 machines opening for SCO?

LM: The focus that we see is really a focus of machines doing work. It isn't a matter of moving in a machine to make an existing business easier to run, but rather designing businesses that work around these machines. And the 386 just gives you the power to do that. It allows the work group to be larger. It allows what the machine can do to be larger. It does it all, without adding any real cost to the system. You're buying the workhorse; you're buying, if you will, the horsepower to do a given task in a given work environment.

What we're seeing is a move toward solution selling. You're not selling the machine, you're selling a solution, the answer to a problem, be it communication or office productivity or the sharing of certain information or the flow of money or what have you. The 386 is simply that—more and more power. As the next generations come along, they just do more.

SCO once had a version of XENIX on the Lisa, on a 68000-based PC. Since both Amiga and Atari have entered the market with 68000-based machines and Apple's beefed up the Macintosh line, do you think there'll be much of a market for XENIX on these machines, or do you think it'll stay primarily an Intel-oriented product?

LM: Clearly there will be a move back; I think there'll be a move back even within Apple. The issue of the Atari and the other small 68000 machines being single-user is probably not real. I don't see any reason at all why UNIX will not come in.

The question that really has to be answered is the difference in the market between the tinkerer-hobbyist and the business environment. Will people invest in putting business systems on those machines? Would there be any real advantage in putting them into office environments? The problem you have is that somebody has to take the investment we've made, then use that investment to make another investment to make these machines do the work. That could be the internal VAR in a large corporation, or the external VAR. The VAR has to be convinced that there's a real advantage to doing so. The cost of the machine is not generally an overriding concern in the total investment.

In the past year we've seen a lot of price-cutting forms of UNIX. We've seen Microport come out as a rock-bottom cost UNIX system. Do you think that SCO would ever sell a product like Microport?

LM: You have to ask yourself, what is Microport selling? First, they're not selling any heavy investment in the product, because the investment was made largely through the work that was done by DRI and funded largely by Intel and AT&T. They took the product and simply said, we have royalties on a product, we'll take that product and move it out.

Because it's an established market, because XENIX is the established product, they'll do, in Microport's own words, a Borland strategy. This is hard to compute. The Borland strategy was in a high-volume market that was clearly elastic. Cutting the price produced more volume. The Microport market appears to be the UNIX hacker, the UNIX guru who is willing to buy something cheap and doesn't really much care about the value-added that SCO brings in with its applications. You clearly cannot support the infrastructure and R&D and all that the market is asking for on the price structure that Microport is using. Consequently, I think we're seeing a hacker's product.

When we first brought out the 8086 products, we were confronted by unrealistic pricing that IBM had done. They had priced the product at $395, which just wasn't adequate to provide the margins you needed to bring the product to market and at the same time fund the development work. Even at that point our wisdom said no price of $395 could support a viable business. And so our first product coming out against IBM was a $495 product.

DM: IBM eventually raised the price to $595.

LM: And even at $595, given the margins, given the royalties you have to pay AT&T for a product, and given the kinds of discounts that permeate the various chains, given the real cost of delivering the product, you're just barely at the right price there.

Doug Michels: "We certainly don't advocate that there's a XENIX vs. DOS argument. DOS is a fine operating system. But if your goal is to run a four-user accounting department, you'd be crazy not to buy XENIX."

Along comes a Microport, saying I'm going to do the same thing for $169—he's got a mail-order product. He can't support dealers, he can't support advertising costs. There's just no way you can build a business based on that and deliver a quality product. We're supplying a major engineering department here, now 125 people. Somebody has to pay that bill. It has to come out of the products that we're doing. And so it just doesn't make any sense. I believe what we're seeing is a philosophy that says if we didn't price it cheap it wouldn't sell; if we price it cheap it'll sell, and that'll give us time to figure out what to do.

DM: Even if you look at the products that Microport sells with its UNIX, the word processors, spreadsheets, databases that they've designed, they're selling them at four times the price of the operating system. They're operating off of an anomaly in the AT&T pricing that they were able to take advantage of, because—as they advertise—they're the same people who used to work for DRI, who did the port. And so DRI paid them to come up to speed, to learn the product, to do the port, with Intel and AT&T money. They've taken advantage of that, used the AT&T royalty structure, and are selling the thing at a very low margin.

That's fine, but what happens when the 386 comes out and they're not the guys who are doing the port for AT&T? They've got to take whatever the port is, learn it, adapt it, and do all that other stuff.

LM: Furthermore, if you look at the product they're selling, it is not a comparable product. It is much less refined. It is really not a satisfactory multi-user product.

Is it correct that Microport has never been object-code compatible with XENIX?

DM: They did claim compatibility

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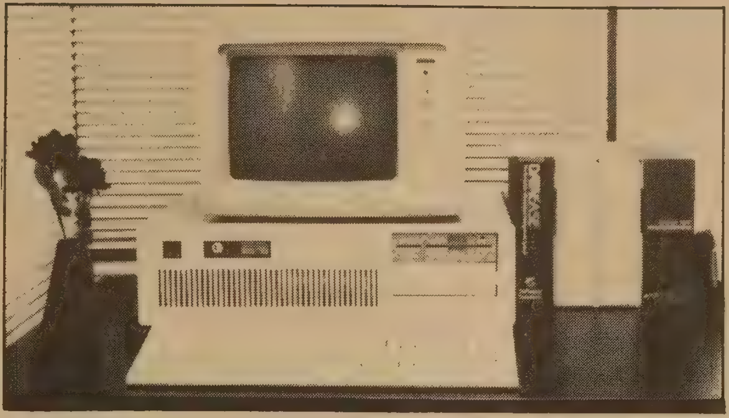

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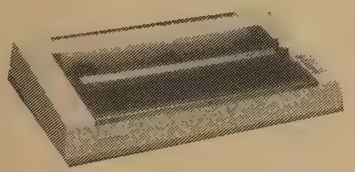

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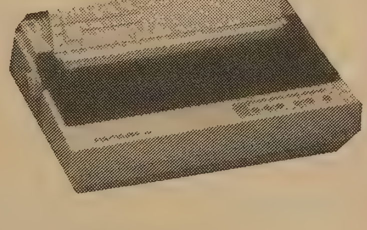

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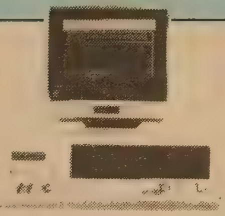

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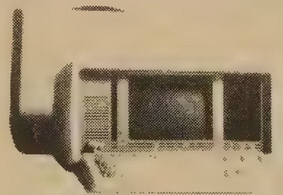

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early on. They retracted that. That was an error in judgment. It's technologically very difficult. It's technologically practically impossible without proprietary knowledge. So there's two questions. One is, is it worth the investment to do it, and two is, if they did it, given that some of their employees had proprietary knowledge, would that be a problem? And all in all, I think wisdom won over.

They acknowledged, I think quite rightly, that in order to sell the UNIX you'd have to have applications. The applications base is built around XENIX. We worked very hard to get the applications base built around XENIX. And therefore, from a strategy of competing with XENIX, XENIX binary compatibility was very important. It just turns out to be very expensive.

It also turns out that, as time changes, XENIX is evolving. So not only is it expensive once, it's expensive for a long time. And so, even though from a marketing point of view it was a desirable goal, it wasn't within the scope of what they could do.

The effect is that currently we're not seeing Microport take away any significant amount of business away from us. If they're getting other business, it's business that couldn't afford XENIX, wasn't a customer for XENIX in the first place. I don't know how much business they're doing, but it doesn't seem to be our business.

I suspect, if anything, that they might be doing us a lot of good, because if they take the people that aren't willing to spend the money to buy XENIX in the first place, they may learn enough about UNIX to decide they want to go to a professional level. It's a lot like Nikon cameras—do you want the professional-grade product, or do you want the stuff for the consumer?

It's a concern, because it confuses the marketplace; it's not really a concern because it's impacting the marketplace.

The other side of that coin, and something that we are looking at, is that AT&T has made it somewhat more attractive to sell a version of UNIX restricted to two users, which is what Microport has done. They get part of their price differential by no R&D. They get part of their differential by no dealer discounting or limited dealer discounting. And they get part of their price differential by using the two-user license.

What we haven't yet really determined, and we're actively looking at, is whether there's a market for two-user XENIX. It's clear that the bulk of our market is people trying to build multi-user systems, and therefore the two-user product's of no interest. On the other hand, if somebody simply needs to replace DOS with something that can address eight megabytes of memory properly, the two-user version might be appropriate. And so to the extent that we can identify a market for a two-user restricted version of XENIX, we may very well use the lower-priced AT&T structure to offer a lower-priced version of XENIX with that restriction.

Who should be using XENIX?

DM: We certainly don't advocate that there's a XENIX vs. DOS argument. There's a huge percentage of people that DOS is exactly what they want, and they should never change. If what you need is a spreadsheet on your desk to replace the calculator that used to be on your desk and do a lot more for you, there's no reason on earth that you should go buy XENIX. You should go buy a machine with however much memory you need, get DOS, get *Lotus*, and everybody's happy. We have no claim on that market. Nor should we. DOS is a fine operating system if that's your goal.

If your goal is to run a four-user accounting department, then how do you do that with DOS? The answer is, well, you buy four PCs and a bunch of networking stuff and try to find some accounting software that can live in that environment. You find out that's pretty hard to do, and if you look at the cost analysis, it's two to three times more expensive at best, and clunky besides, and hard to maintain and build. So if what you wanted was that four-user accounting system, you'd be crazy not to buy XENIX.

The other example is in the two-user world, if somebody's really running against the limitations of DOS—the fact that DOS is an 8086 operating system today, and you may very well need an eight-megabyte address space to run some particular program. Trying to do that with DOS and AboveBoards and all that is kind of difficult. And so you go get XENIX and you just use it as a single-user system, if you want, but it's running the 286 as a 286.

That's even more true when you jump into the 386, and you say hey, now I want paging and 32-bit addressing and all that stuff. DOS can't use a 386 even as a 286. Even when you get whatever the next version of DOS is, whenever it is, it will use the 386 as a 286, and you still have to solve the problem of using the 386 as a 386.

So XENIX fits two niches. One is that it's ahead of DOS by several generations at this point, in using the chips at their rated power. The 386 really is equivalent to a VAX in power, architecture and everything else, but not without an operating system like XENIX.

And two is, a reasonable number of multi-user sites. Depending on whether you're a 286 or a 386, the problem of up to 32 users is very effectively solved with XENIX, as opposed to multi-DOS systems around some sort of network solution.

Other people probably don't belong in XENIX. We don't claim more than a fair share of the marketplace... ☐

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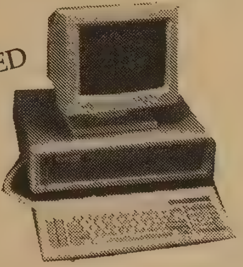

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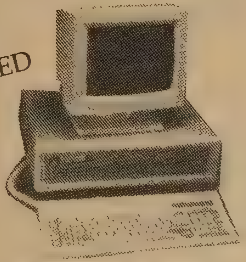

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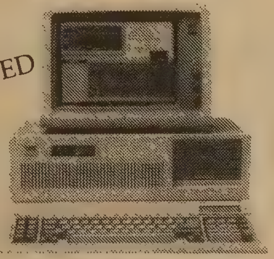

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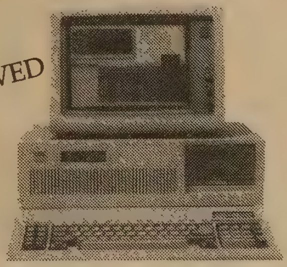

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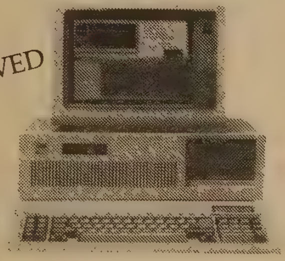

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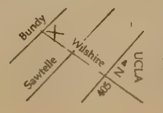

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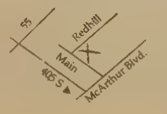

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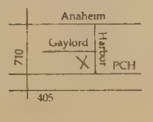

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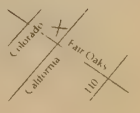
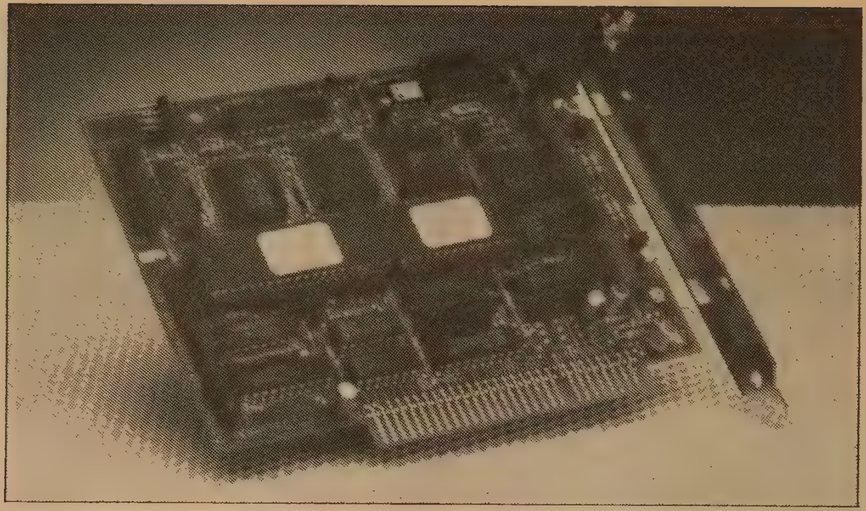




Adaptec ACB 2071 half card RLL controller

How To Add 50% More Storage To Your Hard Disk

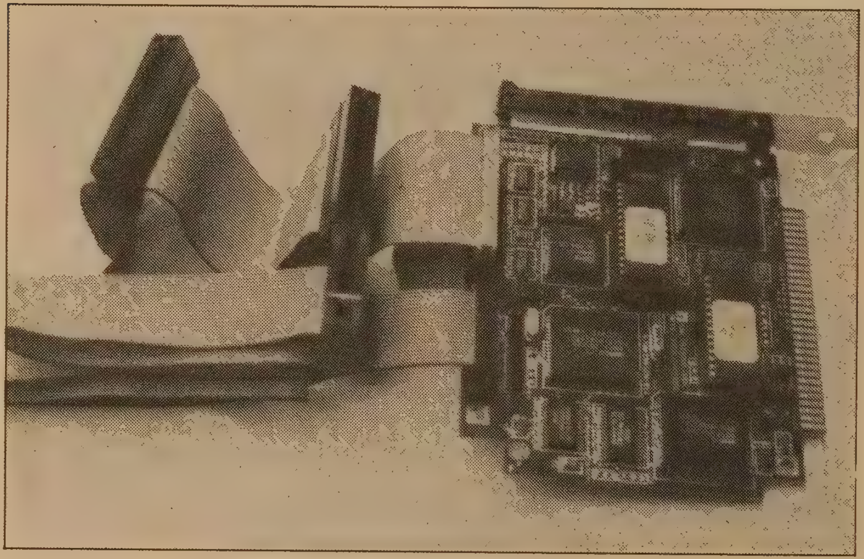
By Aubrey Pilgrim

About three short years ago, ten megabytes seemed huge. IBM sold thousands of PC-XTs with ten megabyte hard disks. At the time, hard disks cost from $1500 to $2000 each; nowadays you can find the same hard disks at swap meets for as little as $75. The main reason the price has fallen so dramatically is that most people have found that ten megabytes is just plain not enough storage—especially for those software pack rats who, regardless of whether or not they'll ever need or use it, feel compelled to buy, beg, borrow, copy and store every piece of software they can get their hands on.

Also, as programs have become more sophisticated and user friendly, they take up more space on your disk. Programs like *dBASE III Plus* and *WordStar 2000* are now very easy to use, but each of them requires about two megabytes of disk storage. Even DOS 3.2 requires well over 300K of disk space for all of its commands.

If you're one of those people with an overcrowded ten megabyte hard disk, you have various options. You could take it out and use it for a door stop, or perhaps a boat anchor. You could then buy a hard disk with a greater capacity. However, these days a 20 megabyte hard disk may cost between $350 and $500.

A much less expensive solution would be to buy one of the Run Length Limited (RLL) controller boards. With one of these controllers, you can re-format your hard disk so that it will be able to store 50% more data.



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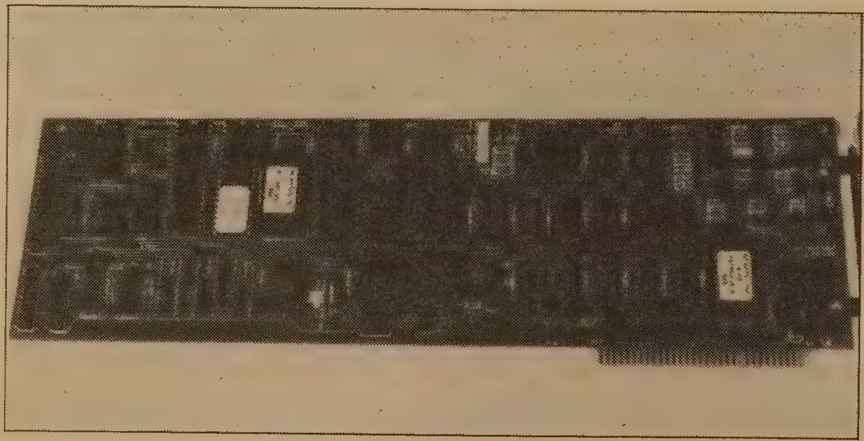

Adaptec ACB-2070A RLL controller

FORMATTING EXPLAINED

Formatting organizes the disk so that data can be stored and accessed easily and quickly. A brief analogy would be that of a developer of a piece of land. He would lay out the streets and create blocks. He would then partition each block into lots and build a house on each lot. Each house would have a unique address. A map of these streets and house addresses would be filed with the city.

When a disk is formatted, the tracks and sectors are laid out and a map is filed. This disk map is called the File Application Table (or FAT). Each time data is recorded on a disk, the location of that data is recorded in the FAT. When a disk has been used for some time and files have been recorded, updated, erased and recorded over again, parts of some files may be located in several areas of the disk. A file will be recorded in the first empty sector, or sectors if it is longer than 512 bytes. So if there is an empty sector on track 5, the drive will record as much as it can there, then move to the next empty sector, which may be on track 20. The location of each part of the file is recorded in the FAT.

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Using these controllers, a 20 megabyte disk can give you over 30 megabytes; a 40 meg drive will give 60.

Most standard hard disk systems use the Modified Frequency Modulation (MFM) method. With this system, each track on the disk surface is formatted into 17 sectors, and 512 bytes can be stored in each sector. If we multiply 512 bytes by 17 sectors, we see that 8704 bytes can be stored on each track. A typical ten megabyte hard disk has 306 tracks on each side of its two platters for a total of 1224 tracks; 8704 bytes per track times 1224 equals 10,653,696 bytes. If you do a CHKDSK command on one of these disks, you may only see 10,592,256 bytes, because 61,440 bytes have been used for the FAT, the directory and other utilities.

The standard for the 360K floppy diskettes is nine sectors per track and 40 tracks per side. Like the hard disk, each sector can store 512 bytes, so 9×512=4608 bytes per track ×40=184,320 bytes per side or 368,640 bytes per floppy. But again, if you do a CHKDSK on a newly formatted diskette, it will show only 362,496 bytes. The other 6,144 bytes have been used for the FAT, directory and other utilities.

The RLL system was developed by IBM some time ago for use on large mainframe hard disks. A couple of years ago, Adaptec of Milpitas adapted the technology so that it could be used on PC hard disk controllers. Since that time OMTI of Mountain View and Western Digital have developed similar controllers. The OMTI controller is built onto a half card. The original Adaptec 2070A is a full size card, but they have recently announced a new half card version, the 2071.

The main difference in the RLL and the MFM systems is that the RLL system manages to squeeze more sectors onto each track. Each sector still has only 512 bytes, but instead of the MFM's 17 sectors per track, the Adaptec RLL has 25 sectors per track and the OMTI has 26.

RLL CONTROLLERS— WHAT THEY CAN DO FOR YOU

I have two IBM PC-XTs in the department where I work. For some time I've pleaded with my manager to let me buy larger hard disks, but there never seems to be enough money in the budget. I finally wheedled $150 out of him and bought an OMTI controller from Paramount Electronics in Sunnyvale for one of the XTs.

The controller came with two sheets of instructions for configuring the board for your particular type of hard disk drive and for re-formatting the disk. The instructions are fairly simple and straightforward, but Bill Boutin of Paramount volunteered to format the disk for me anyway.

I used a copy of *Fastback* to copy all of my files off the hard disk. I then pulled the hard disk out of the computer and took it over to Paramount. It took Bill about 15 minutes to format it.

A CHKDSK done before the hard disk was re-formatted showed that it had 10,592,256 bytes total disk space. After reformatting with the OMTI controller, which puts 26 sectors on each track, another CHKDSK showed 16,195,584 bytes of total disk space. After I showed this to my boss, he agreed to give me $150 more to buy a controller for the other PC-XT in our department.

Even though the two PC-XTs were ordered at the same time and from the same distributor, one had a hard disk from the IMI Corporation and the other had one from the Miniscribe Company. Bill wasn't sure that the OMTI would work with the Miniscribe, so we installed it with an Adaptec controller. Since the Adaptec uses 25 sectors per track, a CHKDSK showed that it had 15,572,992 bytes of total disk space.

This is a fantastic way to increase your disk capacity for a relatively low price. Using these controllers, a 20 megabyte disk can give you over 30 megabytes; a 40 meg drive will give 60. Bill Boutin has formatted several 80 megabyte disks to yield 120 megabytes.

Like most of the standard controllers, the RLL controllers will control two hard disks. The Adaptec controllers can control combinations of 5¼″ and 3½″ hard disks, or two hard disks of different capacities. The LaPine Technology Corporation of Milpitas has recently introduced a 3½″ hard disk drive which uses the RLL controller to yield 30 megabytes.

WHAT THEY CAN'T DO

DOS 3.2 can only address 32 megabytes on a hard disk. Adaptec controllers will allow logical partitioning of large disks; two large capacity hard disks could be partitioned into as many as eight logical drives, with a total capacity of 256 megabytes, using DOS. However, special software would be needed for systems using more than 64 megabytes and for logical partitions three through eight. For these higher drives, it's recommended that you use a software driver available from Ontrack Computer Systems (612/941-4504).

This would appear to be a fantastic and relatively inexpensive way to increase a hard disk's capacity. But there's always the fly in the ointment. Some of the older hard disks will not work with these controllers. Adaptec has tested many drives and has found

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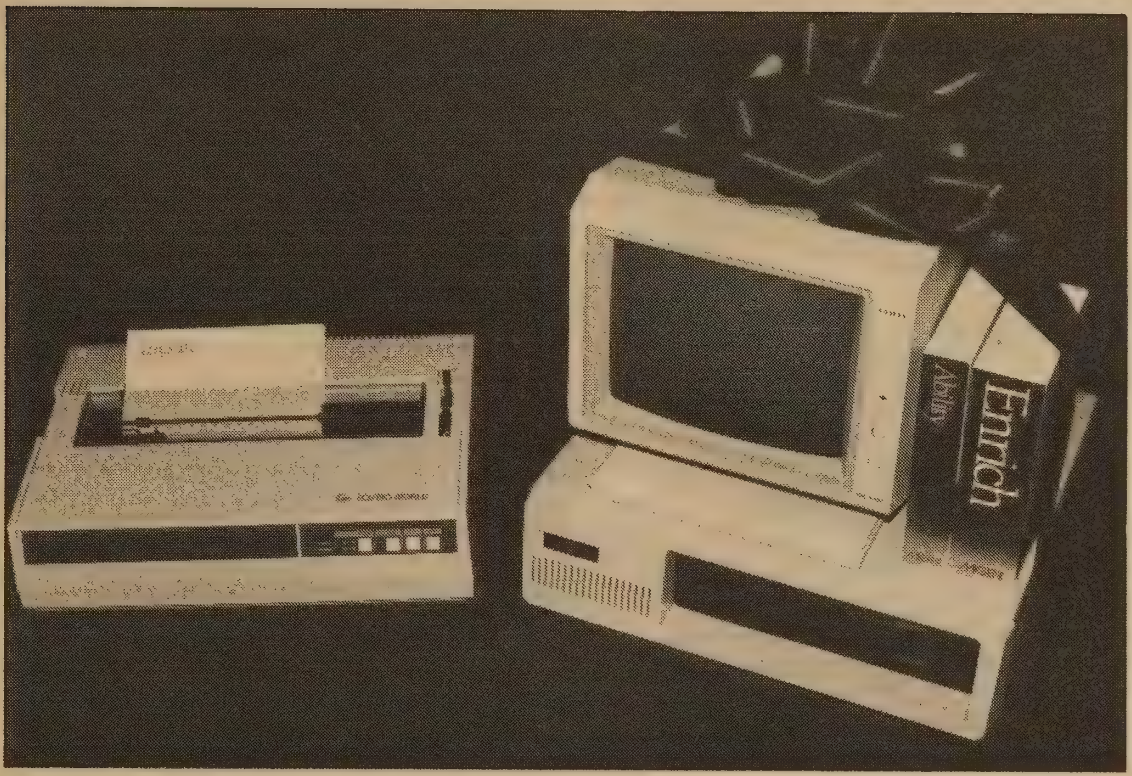

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that most of those that use the thin film-plated and sputter media will work with the RLL controllers. Many of the drives that use oxide media will not work.

The MFM encoding used on ST506/412 drives operates at a frequency of 5.0 MHz and a transfer rate of four megabits per second. The drives also use a 100 nanosecond data window. The RLL controllers operate at a frequency of 7.5 MHz and a transfer rate of 7.5 megabits per second. They use a 66.6 nanosecond data window. In order to use the RLL controller, the disk drive must be able to meet the higher specs.

Most newer drives will meet these specifications. Adaptec has published a fairly long list of the drives they've tested (see chart). If your drive is not on this list, Adaptec suggests that you contact your drive vendor before buying a RLL controller.

Note that Adaptec is a manufacturer and not a retailer. Besides Paramount Electronics of Sunnyvale, Wyle Laboratories of Santa Clara, the V.I.P.C. Company of Hayward, and several others sell the Adaptec RLL drive.

While Adaptec has put together a comprehensive user manual for the ACB-2070A controller, most retailers do not offer it. You can purchase it from Adaptec for $6. I would recommend it to anyone who wants to install one of these boards but is not too familiar with controllers.

LAST-MINUTE UPDATE

Two companies, Maynard Electronics and Systems and Software, have issued press releases stating that they have developed controller boards with the ability to double a hard disk's capacity. A Maynard spokesman said that the Maynard controller divides a track into 33 sectors instead of the usual 17.

By packing more electronics on the controller board, these companies are able to better control the flow of data to and from the disk. By using caching type systems, they are able to transfer data at a rate of nine megabits per second.

Both companies are still testing their boards, and both caution that the boards will not work with some of the older drives. Systems and Software has successfully tested some of the models from Seagate, Miniscribe and Maxtor. The company will offer two versions of its board, one for $495 and the other for $595. Maynard did not quote a price for its board. ☐

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SOME DRIVES SUCCESSFULLY TESTED BY ADAPTEC

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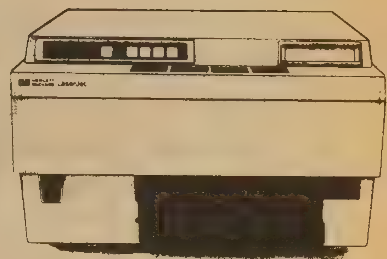

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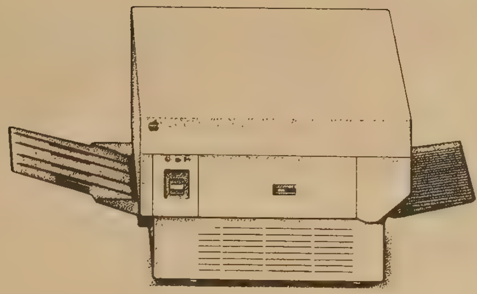

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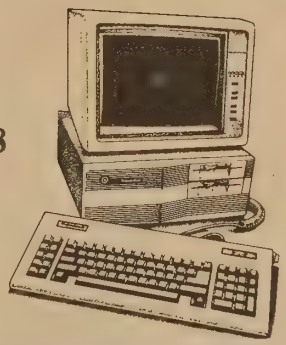

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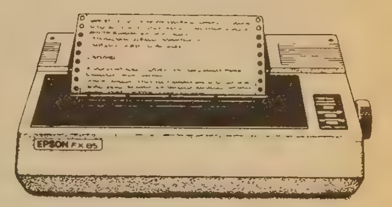

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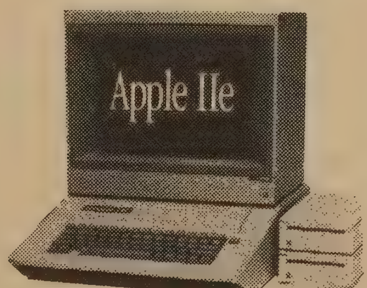

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SuperPaint

The Best Of Both Graphics Worlds

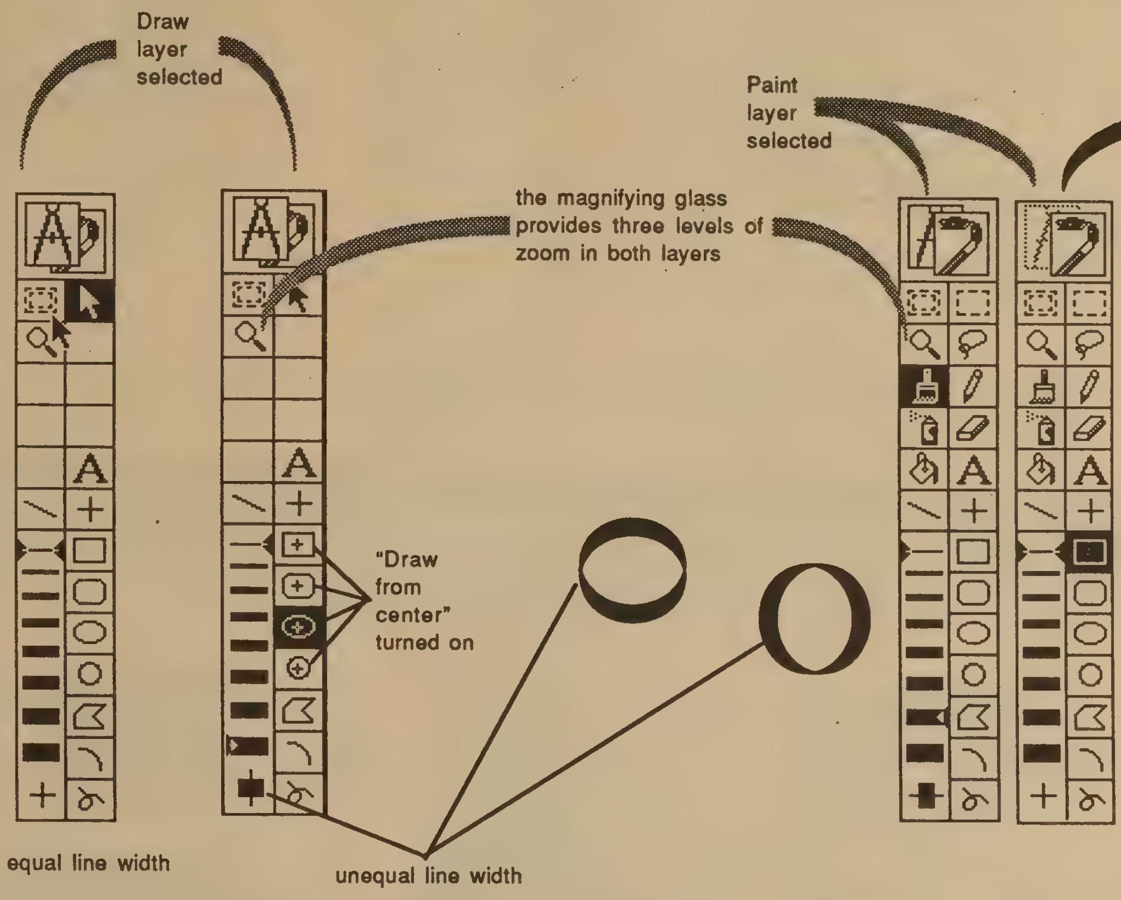
By Bruce A. Fraser

In the beginning was *Macpaint*. *MacPaint* was friendly, fun and surprisingly useful, but it had many shortcomings—a small active window, no rulers, and disappointing LaserWriter output, to say nothing of the fact that you could only work on one document at a time. Given the constraints of the 128K Mac, it was an admirable achievement, but with today's more powerful machines, users want more features and more flexibility in their software. With the release of *SuperPaint* v1.0, Silicon Beach Software has gone a long way towards satisfying those demands.

SuperPaint's list of features reads like every Mac artist's dream, but, as always, there's a catch. *SuperPaint* taxes the 512K Mac to its limits, and serious Mac artists with 512s will probably be queueing up for memory upgrades within a week of getting this program. Fortunately, *SuperPaint* is priced low enough for many users to get the software and the upgrade both.

SuperPaint is more than just a souped-up *MacPaint*. In addition to an extremely full-featured bit-mapped graphics program, it also contains a respectable object-oriented graphics program comprising about 70% of the capabilities of *MacDraw*, all in one elegant package. (See sidebar for an explanation of the difference between bit-mapped and object-oriented graphics.)

SuperPaint integrates these two graphics formats by having two "layers," a Paint layer and a draw layer, which function together like transparent overlays. Moving between the layers is accomplished by clicking on an icon at the top of the tool palette. The paint layer is represented by a paintbrush, the draw layer by a compass. Clicking on the appropriate tool brings that layer to the top and changes the tool palette accordingly. The back, inactive layer can be hidden to avoid confusion between the two layers, and when this is done that layer's icon becomes dimmed.


Draw layer selected
the magnifying glass provides three levels of zoom in both layers
Paint layer selected
back layer hidden
"Draw from center" turned on
equal line width
unequal line width

SuperPaint offers separate tool palettes for Draw and Paint modes

A menu command allows you to copy from the active to the inactive layer. (Anyone who regularly has to paste bit-mapped images into *MacDraw*, only to have them degenerate into several pieces which resist any attempt at being reunited will attest to the value of this feature!) When printing, either layer can be brought to the front. Opaque elements in the front layer will hide elements in the back layer, while transparent elements in the front layer will allow elements underneath them to be seen. Any element in either layer can be opaque or transparent, as you wish.

THE PAINT LAYER

Anyone who has used *MacPaint* will find most of *SuperPaint's* painting tools familiar, but some of the refinements and additions will come as a pleasant surprise. For example, double-clicking on the paintbrush not only brings up the palette of brush tips, but also lets you edit the brush shape, or create your own. Double-clicking on the rectangle, rounded rectangle, oval and circle tools makes a small crosshair appear in the center of their icon. When this feature is active, the point at which you press the mouse button becomes the center of the shape, rather than the corner. This makes it much easier to produce concentric shapes. Double-clicking again toggles these tools back to the usual Paint From Corner mode. (These options are also available from a menu command.)

The line-width palette has a small arrowhead at each end of the line. Clicking on the right of a line will set vertical lines to that width, while clicking on the left sets the width of horizontal lines. If vertical and horizontal lines are set to unequal widths, slanted lines will come in at an intermediate width, and arcs and the borders of ovals will taper. The current selection is indicated by a crosshair at the bottom of the palette.

SuperPaint provides not one, but four pattern palettes. The first is similar to *MacPaint*, two others contain a set of line patterns and grey patterns respectively, and the fourth is left blank to allow you to store your own custom patterns. The Paint menu has a choice of opaque or transparent paint, plus a third item, Paint On Black, which is essentially the inverse of transparent. (Transparent paint lays down only the black dots, while Paint On Black lays down only the white dots.) Used in combination with the large array of available patterns, these features provide easy access to a staggering variety of textures.

Some Draw-like features have been added to the Paint layer. The arc tool is a useful addition that greatly simplifies working with curves. Another useful feature is the ability to set a pattern for lines and borders. Perhaps the most powerful Draw-type feature is the addition of rulers and a grid, complete with a Snap-To-Grid function which makes precise alignment of shapes much easier. (The Grid snap is ignored by the lasso, brush, pencil, spray can, freehand and eraser tools.) Rulers can be set to read in Inches, Centimeters, Picas/Points or Screen dots, and grid increments can be set as small as .05 inches.

Lastly, Rotate, Slant, Distort, Stretch and Perspective menu commands work on marquee selections to provide the effects first popularized by the Click-Art Effects add-on for *Mac-*

Bruce Fraser has used a Mac since shortly after they began shipping, and he owns and operates MacRight Associates, a consultancy dedicated to Mac training and problem-solving. He can be reached at (415) 387-2374 (voice) or through MicroTimes.

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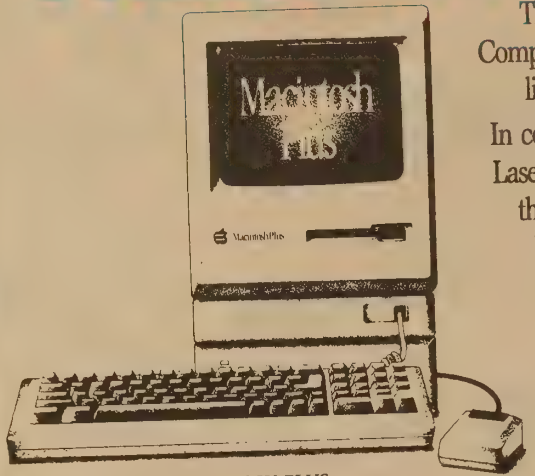

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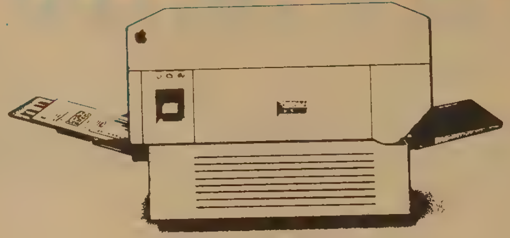

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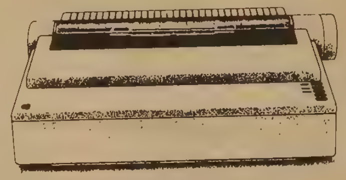

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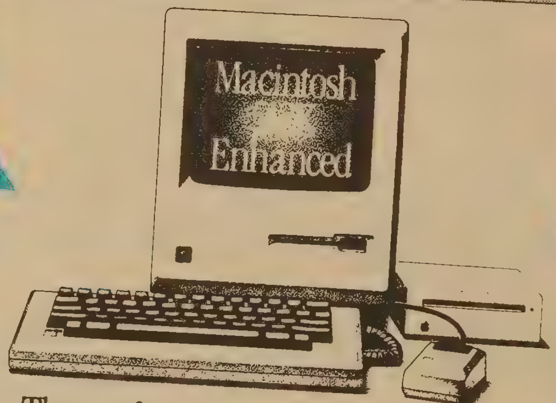

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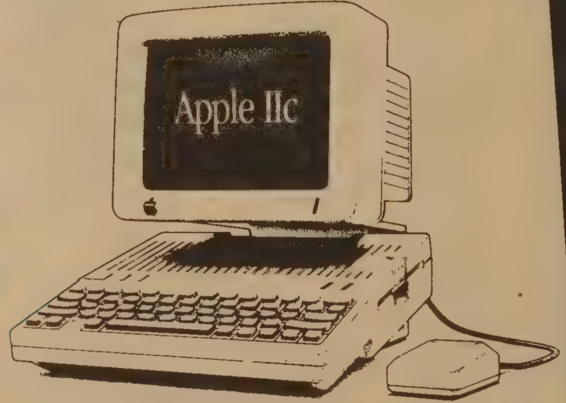

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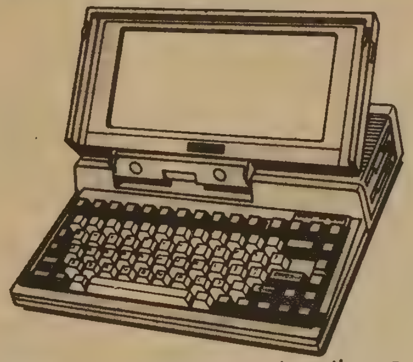

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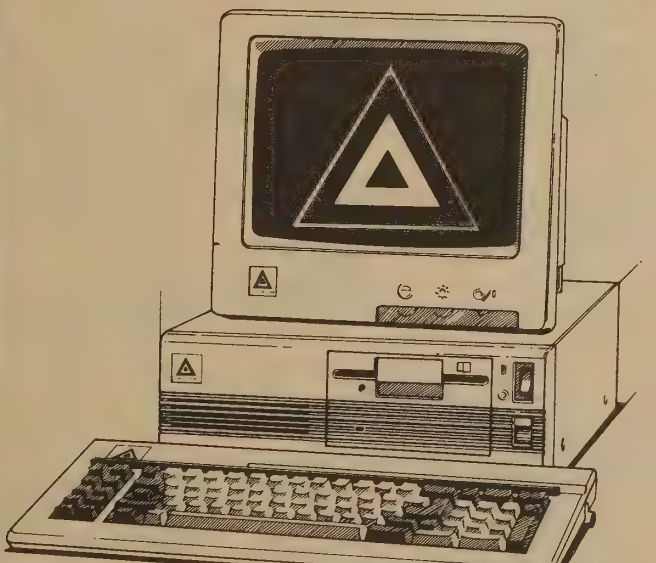

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Paint. A nice touch is that, when using the perspective effect, if you hold down the Shift key while dragging one of the handles, the opposite handle will move the same distance from the center in the opposite direction. This kind of attention to detail is typical of *SuperPaint* and is evidenced by numerous small touches throughout the program.

THE DRAW LAYER

Although the manual states explicitly that *SuperPaint* is not intended as a replacement for *MacDraw*, the Draw layer of the program is quite powerful in its own right. Indeed, for those users who primarily use the ImageWriter, it surpasses *MacDraw* in some respects. As with the Paint layer, anyone who is comfortable in *MacDraw* will find that much of *SuperPaint* is already familiar. The shape and arc tools work much the same as in *MacDraw*, with the addition of the Draw From Center option described above. The line width selector and multiple pattern palette features from the Paint layer are also available in Draw.

Familiar Draw features such as Grouping and Ungrouping, Locking and Unlocking, and Aligning Objects are all present, as are Send To Back and Bring To Front. Text objects are handled somewhat differently from *MacDraw*. *MacDraw*'s annoying font limitations have been done away with here, and fonts can be scaled to any size from 4 to 127 point. LaserWriter fonts will print well on the LaserWriter at any size, but ImageWriter fonts look strange when scaled to a size which isn't installed in the system. (This is true of any graphics program for the Macintosh, not just *SuperPaint*.)

Text objects can be either fixed or expanding. With fixed text objects you set both the height and width. Text will attempt to format itself to fit in the object. Any text left over will be stored in the object, but will not display or print. With expanding text objects you set the width, and the object sizes itself to contain all the text. Fixed objects can be converted to expanding and vice versa by clicking on an indicator which appears when the object is selected.

Some *MacDraw* features are missing from *SuperPaint*. Text objects cannot currently be rotated in *SuperPaint*, nor can "painted" objects (i.e. objects imported from the Paint layer). *SuperPaint* also lacks the ability to smooth polygons, and smoothed polygons imported from *MacDraw* will not retain their smoothing. *SuperPaint* will not create multipage documents.

There are also some features which currently will only work on the ImageWriter, not on the LaserWriter. On the ImageWriter, objects in the Draw layer can be either transparent or opaque. On the LaserWriter objects will always print opaque, unless they are "painted" objects imported from the Paint layer. Also, on the ImageWriter you can create patterned text in either layer. The LaserWriter will only print patterned text created in the Paint layer, and this will print as a bitmap rather than as a PostScript font. It is these shortcomings which prevent *SuperPaint* from being a replacement for *MacDraw*. However, this does not detract from a great paint program, and Silicon Beach Software has stated its intention to add many new features to the Draw component of the program in its next release.

FEATURES COMMON TO BOTH LAYERS

SuperPaint allows you to work with multiple windows open at once. The actual number of windows available depends on the amount of memory you have available and the complexity of the document. On a 512K Mac, you can open two windows at once, but if you try to use any other software which takes more than 25K of memory, such as RAMdisks, RAM caches, Hyperdrive System software, *Tempo*, etc., you will get a message informing you that *SuperPaint* has insufficient memory to run. On a MacPlus, you can have up to seven windows open at once, depending on the complexity of the documents. On my two-megabyte monster, I have had fifteen windows open simultaneously, at which point my memory gave out. (The memory in my head, that is, not in my Mac!) Under Switcher, the minimum memory size is 430K, which will allow you to have only one window open. With the preferred memory size, 614K, you can open up to four windows at a time. The tools, pattern palettes and menu bar can all be hidden, allowing you to work with the full Macintosh screen in either layer. All tools including the lasso scroll automatically in either layer. This feature can be disabled by a menu command. Holding down the spacebar with any tool (Command-spacebar with the text tool) turns the cursor into a grabber hand for moving around the document.

SuperPaint can open and save documents in *MacPaint* and PICT format, as well as *SuperPaint* format, which contains both bit-map and object-oriented information. Additionally, *SuperPaint* can open and create startup screens. (A startup screen is basically a *MacPaint* document entitled Startup Screen which is installed in the system folder. The usual "Welcome to Macintosh" screen is one example, but many software packages, notably games, have custom startup screens.) Color printing on the ImageWriter II is fully supported by *SuperPaint*.

LASERBITS

LaserBits is just what it sounds like—FatBits at LaserWriter resolution, 300 dots per inch. The mechanism by which this is carried out is ingenious. First, select the area of the Paint layer which you wish to edit. Next, choose New LaserBits from the File menu. *SuperPaint* will then present you

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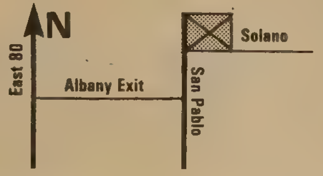

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with the standard Save As... dialog box asking for a name under which to save the LaserBits document. Your selection is saved as a *SuperPaint* document, enlarged by a factor of four.

Each LaserBits document is limited to a two-inch by two-and-a-half-inch area, since it has to fit into *SuperPaint's* eight-by-ten inch image area after it has been enlarged. Editing the document is just like working with FatBits, and on screen it will look like a regular bitmap, but when printed on the LaserWriter each dot will be one-three-hundredth of an inch, and the results are spectacular. While you can only have one LaserBits document open at a time, there is no limit to the number of LaserBits objects a document may contain. *SuperPaint* remembers the link between the LaserBits document and the document which contains it. The only constraint is that when you come to print a document containing LaserBits objects, the LaserBits document(s) must be on disk and available.

Alternatively, if you work with other applications which support PICT format, such as *PageMaker*, you can simply save the *SuperPaint* document containing the LaserBits object as a PICT document. This PICT document will then contain the LaserBits information. You can also use the clipboard to transfer LaserBits objects to other applications such as *MacWrite*. However, this will take quite a while, and the clipboard file which results will be quite large, so be sure you have plenty of disk space available before you try it. I should mention here that if you try to print a LaserBits document, it will simply print as a regular *SuperPaint* document. To enjoy the benefit of the LaserBits effect, you must print the document in which the LaserBits object has been placed. Although this may sound confusing, it is quite easy and intuitive in practice.

IN CONCLUSION...

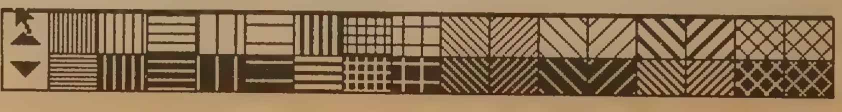
SuperPaint is by far the most complete Paint program available for the Mac, quite apart from its other capabilities. Although it is packed with features, the interface is elegant, uncluttered and altogether Mac-like. When working with multiple complex documents, some loss of speed is apparent, but this never becomes unacceptable. In using *SuperPaint* with a wide variety of applications, the only incompatibility I have discovered occurs in attempting to open PICT documents created with *Cricket Graph*—trying to open them hangs the Mac, while importing them via the clipboard causes a bomb. Opening the same documents with *MacDraw* and saving them as PICT format seems to take care of the problem. I talked to Charlie Jackson, president of Silicon Beach, and he advised me that although they had only recently become aware of the problem, they were working on a fix. With this sole exception, *SuperPaint* has been completely trouble-free. Although I have tried to cover *SuperPaint's* main features in this review, there are simply too many to mention. At $99 list, *SuperPaint* is exceptionally good value for money, and few Mac users should be without it. (SuperPaint, Silicon Beach Software, Inc., P.O. Box 261430, San Diego, CA 92126, 619/695-6956.)

MACINTOSH GRAPHICS FORMATS

There are generally two quite different ways for computers to handle graphics: bitmapped graphics, where the computer remembers whether each screen dot, or pixel, is black or white, and object-oriented graphics, where the computer stores "objects" such as lines, circles and fill patterns. Each approach has its strengths and weaknesses. On the Mac, we usually refer to programs which produce bitmaps as "paint" programs and those which use object-oriented graphics as "draw" programs. The PICT format is a standard format for object-oriented graphics which has been adopted by many Macintosh programs, including *MacDraw*, Microsoft *Chart*, *Excel* and others.

The major limitation of paint programs is the output resolution. Because paint programs remember screen dots, they are limited to a resolution of 72 dots per inch (d.p.i.), whether you print on an ImageWriter, a LaserWriter or a PostScript digital typesetter such as the Linotronic series. Scanners also produce bitmaps, although some scanners such as the Abaton and Microtek will produce 300 d.p.i. bitmaps. Although output from these scanners will look better when printed on the LaserWriter than *MacPaint* documents, their output resolution is still fixed. A bitmap is a collection of dots, of whatever size.

Draw programs, on the other hand, remember "objects," and generally they will print at the maximum resolution offered by the printer. Objects can be "stacked" on top of each other, and the program will remember the stacking order, unlike paint programs. However, while draw programs are excellent in applications such as charts and diagrams, they are virtually useless when it comes to producing naturalistic art, so paint programs are also necessary in many situations. *SuperPaint* is exceptional in its ability to freely mix bitmapped and object-oriented images.



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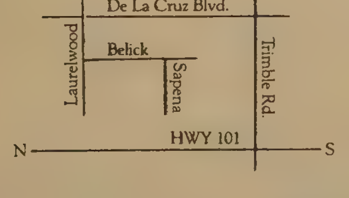

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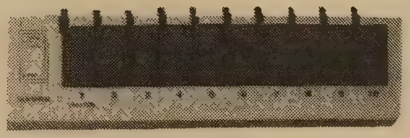

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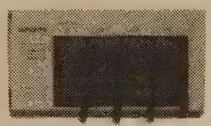

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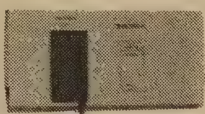

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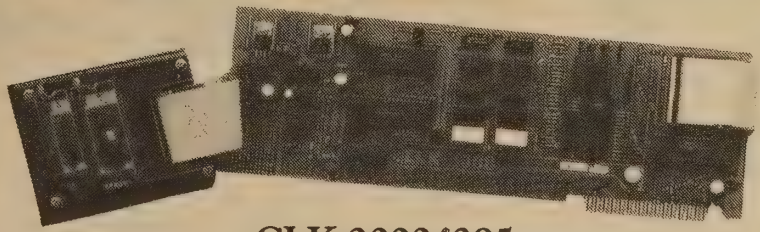

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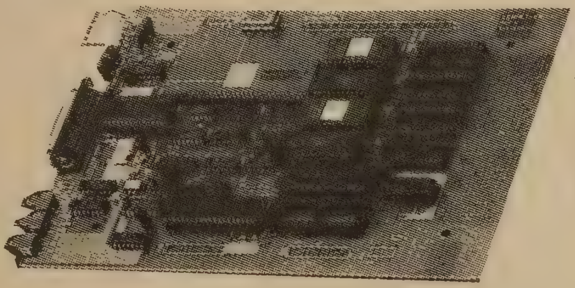

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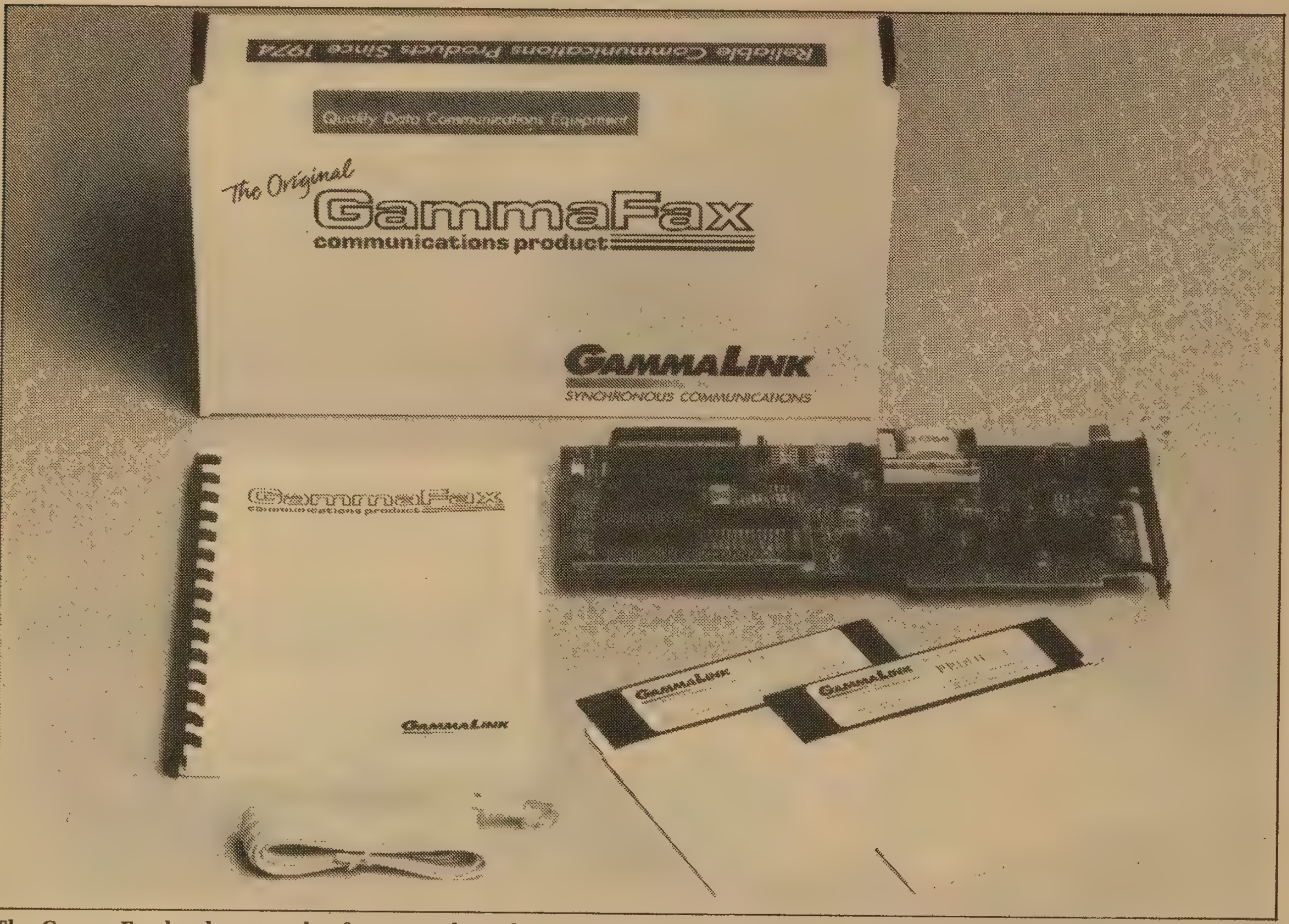
Fax Meets PC

The convergence of facsimile technology and the personal computer industry offers a new way to transmit information fast. Here's a look at what's possible now—and what to expect in the future.

By Julie Weiss



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In today's fast-paced business world, where everybody needs information yesterday, speedy transmission of documents is often vital. While most businesses rely on overnight-mail carriers to get documents from place to place quickly, there's no doubt that this is an expensive option.

A better and cheaper solution is on its way, from an often-ignored source—not Federal Express, not MCI Mail, but the facsimile (fax) machine. The fax machine can send documents to destinations anywhere in the world in less than 20 seconds, for a price of 45¢ a page. Because of the substantial savings of time and money it offers, fax technology is winning ever-increasing acceptance in the business world.

A SHORT HISTORY OF FAX

The fax machine can be described as a photocopy machine which transmits a document over the public telephone network. Its basic function is to scan documents and encode them into audio signals, transmit these signals over telephone lines, then reconstruct the signals at the receiving end to print an exact duplicate of the original document.

Fax technology is not new; the first fax machine was invented in 1843 by Alexander Bain. However, the technology lay dormant for many years because of transmission problems, poor quality of output, and lack of standardization between different manufacturers' machines.

In the late 1960s, the CCITT (Consultative Committee for Telephone and Telegraph) set international standards for facsimile devices. It established recommendations for protocol and transmission techniques so that different machines could communicate with each other. The CCITT standards were divided into three primary Groups: Group 1, which allows transmission of a document in four to six minutes; Group 2, which provides two-to-three-minute transmission; and Group 3, which transmits in less than a minute.

Group 3 is the predominant transmission standard used today. Standards for a new category, Group 4, are in the process of being devised for transmission through private digital networks. Group 4 devices can send a document anywhere in the world in five to eight seconds. However, industry experts believe that it will be sometime in the next decade before Group 4 technology finds wide acceptance, because its standards depend on general adoption of ISDN (Integrated Services Digital Network).

For a variety of reasons, facsimile devices have enjoyed a dramatic increase in popularity in recent years—total end user shipments of fax machines grew from 89,000 in 1984 to 157,000 in 1985, an increase of 76% in one year. This growing acceptance can be traced to several factors—universal standards, decreasing cost of Group 3 equipment, extensive advertising campaigns by manufacturers, and broader channels of distribution.

After the CCITT standards were set, facsimile machines became fully compatible with each other. The standards enabled machines to talk to each other anywhere in the world in a matter of minutes. Further, fax offered a considerable advantage in accuracy over the competing telex technology: while a telex user must key in all the information at a terminal, thereby creating a significant possibility of error, all the fax user has to do is insert the original document into the fax machine.

Meanwhile, public awareness of fax technology has been boosted by vigorous radio, television and magazine advertising campaigns by such key vendors as AT&T-IS, Ricoh, Canon and Harris/3M.

Finally, a change in the distribution channel for fax machines has had a profound effect. Prior to 1984, fax machines were sold through the individual manufacturer's direct sales force. The prices were high enough to generate large commissions for the sales team, and the target market was the Fortune 500. In 1984, as prices began to decline, the manufacturers saw they couldn't afford to keep a direct sales operation throughout the United States.

In the meantime, many fax vendors who were also manufacturing copiers and typewriters sold their wares through office equipment dealers. The dealer channel offered various advantages, notably stronger market penetration and attractively high profit margins for dealers. The typical office equipment dealer, found in every city and town in the US, has one or two offices and covers a certain geographic and demographic area. He knows and understands his customer base very well. His target market is the small- to medium-sized companies (such as doctors' and lawyers' offices, pharmacies, schools, banks, etc.). Office equipment dealers are currently the predominant distribution channel for fax devices.

This, too, will change, probably by 1988-89. When the price of fax goes below $1500, it will not be financially advantageous for dealers to carry this product, as gross margins will be slim; retail stores and mass merchandisers will emerge as leaders in fax distribution as prices continue to fall.

Currently, the average fax machine price is $3000. The features offered include delayed broadcasting, sequential broadcast, and activity reports. Delayed broadcasting permits the fax to call when phone rates are lowest and when the machine is unattended. Sequential broadcast will call one number, transmit documents, call the next number, transmit documents, and so on. Activity reports generate time and date stamps to

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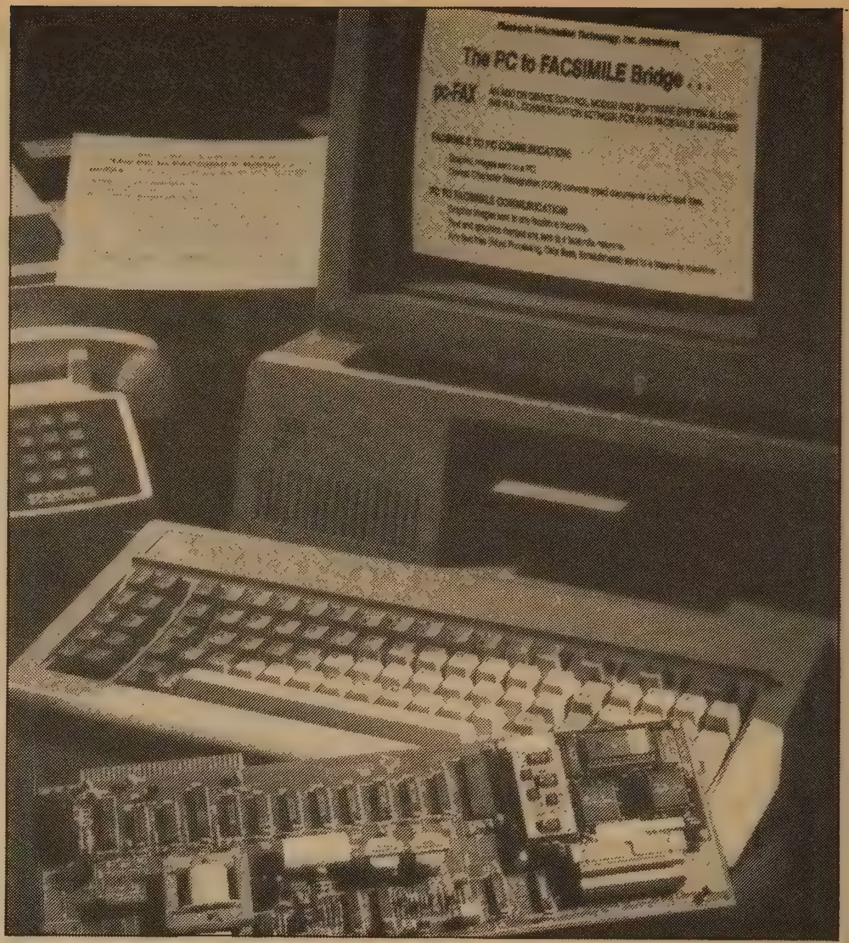

The pc-FAX board from Electronic Information Technology (201/227-1447) allows PC-to-PC communications and transmission between PCs and facsimile machines. The software which accompanies the board offers image handling, text and image merging, and ASCII-to-fax file conversion. An optional Optical Character Recognition module allows the user to receive a facsimile of a typed document, then convert it to a format that can be edited by a standard word processor.

show when documents were transmitted and received.

New features include memory and RS232C interface ports. Memory, usually one or two megabytes, allows documents to be stored for later transmission, so that they can be put back in the files instead of kept sitting around in trays. Up to 100 numbers can be programmed into memory, and can be dialed up at the push of a button or two, enabling those 100 locations to receive documents. The RS232C ports allow computer to fax communication, with the fax machine serving as a printer.

PERSONAL COMPUTERS AND FAX

A new development in fax technology is the availability of add-on products which allow a personal computer to emulate a fax machine. The fax card is fitted into the back of an IBM PC or compatible machine, and used in conjunction with special software; these products will convert image files in the PC into Group 3 format and then transmit the files to any other Group 3 machine or similarly equipped personal computer. The board and software will also enable the PC to receive Group 3 transmissions, convert them into image files and store them on disk for display or printout. The average price for the board and software is $1000, most of which is for the board's 9600 bps modem chip.

This technology offers features similar to those of the fax machine—polling, automatic receive, halftone, automatic dialing, and activity reports. Many new players in the market, such as Datacopy, Microtek, and Panasonic envision the personal computer with the board, software, and scanner as a viable substitute for the standalone fax machine.

There are still some significant obstacles to the acceptance of fax-PC technology. Currently, the PC board and software allow text and graphic file creation, but only copy generated by a PC can be sent. Until scanners are incorporated into the workplace, the expansion of the PC-based fax market will be relatively slow.

Another problem is that it's fairly wasteful to use a personal computer solely as a dedicated fax machine. Until vendors offer boards with background recognition capability—i.e. the ability to receive fax documents while working in some other application—this use of the personal computer probably won't be widely adopted. Currently only two manufacturers—Panasonic and Datacopy—offer such a board.

There is clearly an awareness of and market for facsimile machines. The question is no longer when fax will be accepted in the marketplace, but rather which technology will emerge as the winner—the standalone unit or fax board. In either case, vendors are addressing the key issue—enabling users to send time-vital information anywhere in the world in an efficient and inexpensive manner. ☐

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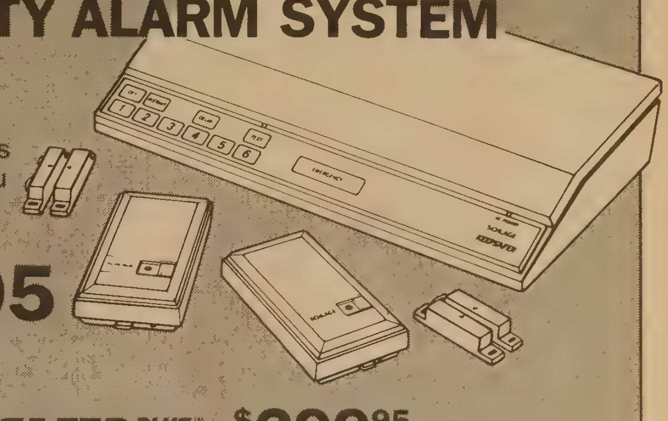

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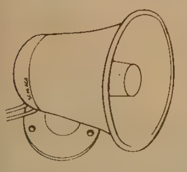

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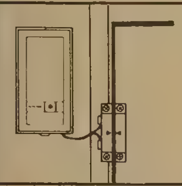

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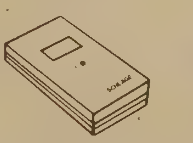

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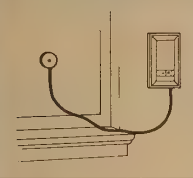

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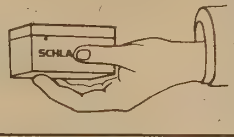

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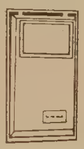

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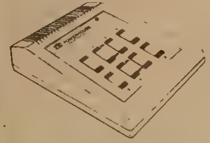

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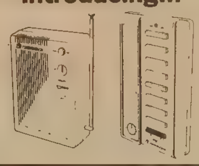

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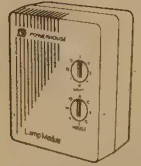

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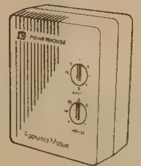

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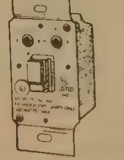

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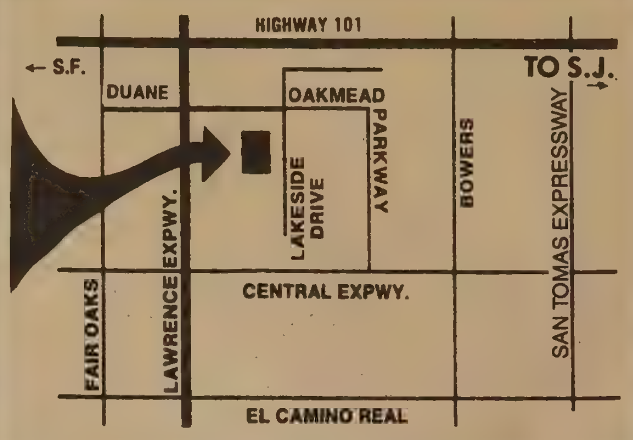

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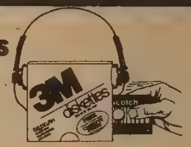

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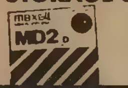

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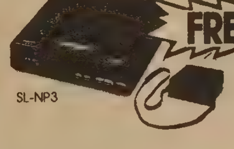

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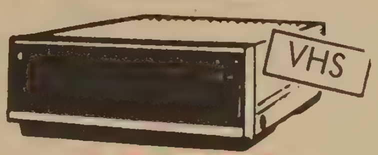

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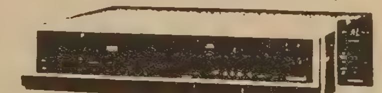

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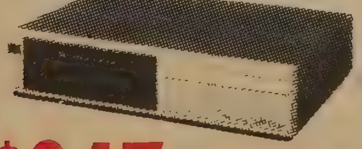

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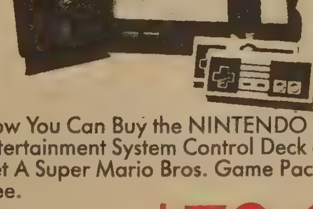

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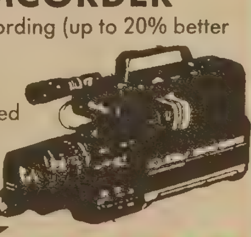

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Hands On—Informix-SQL

By Bennett Falk

Database development in UNIX is not just the province of consultants; there is no intrinsic reason for the construction of a database under UNIX to be appreciably harder than database development on a PC, given the right tools for the job. Among the database management products available for UNIX computers, *Informix-SQL* is an excellent example of how a powerful database development apparatus can be packaged in a form that any computer user can master.

Relational databases generally store data in two-dimensional tables, with columns representing a common field of data (say, ZIP code in a table that contains address information) while rows represent records, or data from all of a table's columns relevant to one case (for example, an entire address).

A good relational database should have commands to allow the user to manipulate tables in a variety of ways. Among other desirable features, a relational database must have the capacity to "select" any row or group of rows from a table, to "project" any single column or group of columns from the selected table, and to "join" tables logically, producing new data structures from which selections and projections can be made.

BUILDING A DATABASE

To see how *Informix-SQL* accomplishes selections, projections and joins, we need a small database. We can start building one by giving the command that starts *Informix-SQL* (typing "**isql**" and pressing return in response to the UNIX shell prompt). After a brief sign-on message, the screen clears and the following menu appears at the top of the screen.

```
INFORMIX-SQL: [Form]
Report Query-language User-menu Database Table Exit
Run, Modify, Create, or Drop a form.
----------- test -----------  Press CTRL-W for Help ------
```

Choose the "Database" option, and a sub-menu appears. The sub-menu includes options for creating, dropping, and selecting a database. When the "Create" option is chosen, the user is prompted to enter the name of the database to be created; assuming that no conflict exists with an existing database name, the database dictionary, itself a set of database tables, is created.

Once you've established the system tables for a database, you can build the user's tables. Selecting the "Table" option from the main menu will bring up a sub-menu with the options Create, Alter, Info, etc. Choose "Create" from this menu, and you'll be prompted to enter a name for the new table; assuming again that there are no conflicts with existing table names in the current database, the following screen will appear:

```
CREATE TABLE people : [Add]
Modify  Drop  Screen  Exit
Adds columns to the table above the line with
the highlight.
--- Page 1 of 1 --- test ----- Press CTRL-W for Help ---
Column Name    Type    Length    Index    Nulls
[        ]
```

Using this screen, assign names, data types, and index types to the columns of the new table. *Informix* allows nine distinct data types: character, long integer, short integer, long floating point, short floating point, decimal, money, date, and serial. Indexes can be added to individual columns or combinations of columns, and can either allow or disallow duplicate values in the columns they are attached to. Finally, columns may be set up to allow or to prevent entries with "null" or missing data.

If the screen above were used to build a table to contain personnel records, it might look like this when completed:

```
CREATE TABLE people : [Add]
Modify  Drop  Screen  Exit
Adds columns to the table above the line with
the highlight.
--- Page 1 of 1 --- test ----- Press CTRL-W for Help ---
Column Name     Type    Length   Index    Nulls
[personnel_id]  Serial           Unique   No
first_name      Char    15                Yes
last_name       Char    20       Dups     Yes
address         Char    20       Dups     Yes
city            Char    20                Yes
state           Char    2                 Yes
zip             Char    5        Dups     Yes
comment         Char    50                Yes
```

This screen describes a table in which each employee would have a unique identification number (the "serial" data type is a sequential number automatically assigned by *Informix* to each new record added to the table).

Once the field names, data types and index information have been entered correctly, press the DELETE key to return to the menu's command mode. From this point, typing "E" to exit will give the user a choice between building the new table and discarding the information just entered. If we decide to build the table at this point, we are also given the option of saving the column definitions in a file for editing or future reference. When a table is built from the *Informix* menus, "**ised**" creates a script containing SQL statements to add the table to the database. The SQL script for the "people" table looks like this:

```
create table people (personnel_id serial(1) not null,
    first_name char(15),
    last_name char(20),
    address char(20),
    city char(20),
    state char(2),
    zip char(5),
    comment char(50);

create unique index people_1 on people
    (personnel_id);

create index people_3 on people (last_name);

create index people_4 on people (address);

create index people_7 on people (zip);
```

The relational model of database design assumes something more complex than a single table database, so let's add another table to describe jobs to which people might be assigned. The procedure used would be identical to that described above, and the completed schema for the table might look like this:

```
CREATE TABLE jobs: [Add] Modify Drop Screen Exit
Adds columns to the table above the line with
the highlight.
--- Page 1 of 1 --- test ----- Press CTRL-W for Help ---
Column Name    Type     Length  Index    Nulls
[job_number]   Serial           Unique   No
job_name       Char     20               No
job_leader     Integer          Dups     Yes
start_date     Date             Dups     No
end_date       Date             Dups     Yes
```

In this table, there will be a unique record for each job. The schema is set up to allow the same person to work on several jobs; notice that the job leader field has been indexed, but indexed to allow duplicate values for that field in this table. The job leader field will be used to join the people and job tables: the counterpart field in the people table is **personnel_id.** Notice that **personnel_id** is a "serial" field while **job_leader** is an "integer" type field. This is the only instance in which fields to be used in joining two tables may be of different data types. The serial data type can't be used to identify job leaders in the jobs table, because there can be only one serial field per table and there is already a serial type field supplying job id numbers.

USING SQL

The Structured Query Language on which *Informix-SQL* is based should be pretty much the same in any database product that uses it. In *Informix*, the "Query-Language" option from the main menu will produce a menu of commands which enable the user to compose and run SQL queries.

```
RDSQL: [New]  Run  Modify  Use-editor
Output   Choose   Save   Info   Drop   Exit
Enter new RDSQL statements using the RDSQL editor.
----------- test ------------- Press CTRL-W for Help -----
```

Selecting the "New" option from this menu will start an editor (part of the *Informix* menu interface) which allows the entry of new queries. The built-in editor is good for short queries; the "Use-editor" option will start a UNIX editor to allow the user to enter and edit more complex scripts containing large numbers of SQL statements.

Assume that the sample database described above has the following data already entered. The "people" table contains:

```
first_name last_name  address  city  state  zip
1 Thalamus Backmatter 1313 Ad Hominem Walk Berkeley CA 94709
2 Edna Beatrice  Mudd  3332 Bowdler Street  Modesto  CA  95911
3 Laurel   Echelon   9876 Enigma Circle   San Rafael   CA   94912
4 Boodie   Warbutton   23 Palindrome Alley   Wisteria   OR   98909
5 Farabundo   Dada   777 Draconian Pike   Rosetta   CA   97234
```

The job table contains:

```
job_     job_                 job_    start_     end_
number   name                 leader  date       date
1  Writer's Workshop          4  09/09/1986 02/01/1987
2  Perpetual Motion           5  10/21/1986 02/21/1987
3  Marketing Retreat          3  2/01/1986 12/15/1986
4  Database Development       1  07/01/1986 10/31/1986
```

Using SQL, all queries are implemented with a "select" statement. To select entire rows from a table, the SQL query need only feature an "*":

```
select * from jobs;
```

The output from this statement looks exactly like the listing of sample data for the jobs table. The selection could be made more specific by adding a "where" clause. This SQL statement would select all rows from the jobs table which refer to finished jobs:

```
select * from jobs
where end_date>today;
```

In this query, "today" is a built-in variable that allows date comparisons with today's date.

"Projections" are accomplished by simply list-

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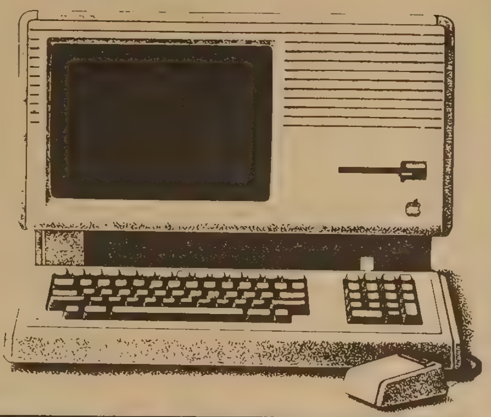

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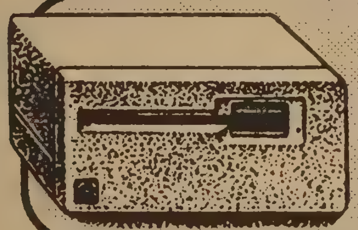

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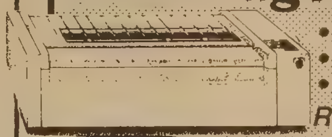

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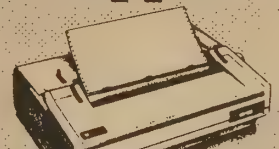

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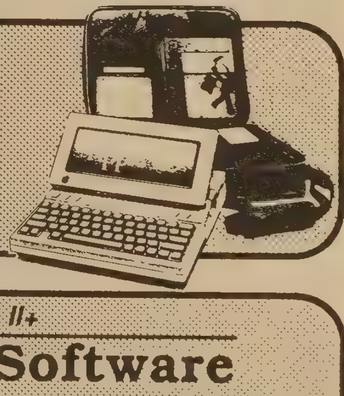

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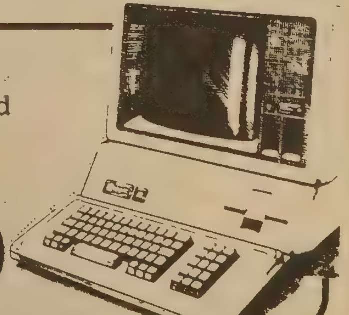

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ing the desired fields. Using the tables above, the following statement could be used to retrieve just the "**job_name**" column from the jobs table:

```
select job_name from jobs;
```

This command simply selects one column from the table and presents it in isolation from the rest of the data the table contains. The following SQL statement would retrieve from the "jobs" table the names of all jobs currently underway:

```
select job_name from jobs
    where start_date<today
    and end_date>today;
```

The "where" clause is also the mechanism by which tables are joined in a select statement. The following command retrieves the names of both the job and the job leader for all current jobs:

```
select job_name, first_name, last_name
  from jobs, people
  where start_date<today
  and end_date>today
  and job_leader=personnel_id;
```

This command resembles the simpler commands in form, but the list of fields that follow the word "select" is drawn from more than one table.

SQL is an excellent query language: it includes many relational operators (among them AND, OR, NOT, IN, LIKE, MATCHES), the ability to "nest" one query inside another, embedded arithmetic operations, and several built-in functions (such as COUNT).

In spite of all this wonderfulness, however, SQL is hardly a complete database management system on its own. It does little to format the results of queries; its "insert", "update", and "delete" statements, though admirably suited to "batch" database operations, are not convenient to use interactively. Even querying a database requires the user to know an awful lot about both the database structure (column names and the like) and the syntax of the query language itself.

Informix-SQL remedies most of these shortcomings by providing a number of programs to serve as a "front end" for its implementation of SQL. The "interactive schema editor" (**ised**) discussed above is one such program. In addition, *Informix-SQL* includes both a report writer ("Ace") and a screen-oriented transaction processor ("Perform"). The report writer provides complete formatting control over the results of SQL queries. The transaction processor, though less explicitly bound to SQL itself, provides an easy and effective way to enter, update, and query data in multiple tables.

BUILDING PERFORM SCREENS

One problem with the Structured Query Language is that its commands for entering and updating data are unwieldy. The "Perform" transaction processor provides a relatively simple way to join tables and to add, update or query records, without knowing either the column names or SQL syntax.

Once database tables have been built successfully, forms can be constructed for entering and querying the data. From the main menu, the "Form" is selected, and a sub-menu appears with these options:

```
FORM: [Run]
Modify  Generate  New  Compile  Drop  Exit
Use a form to enter data or query a database.
------------ test ------------ Press CTRL-W for Help -----
```

Selecting "Generate" from this menu will start the process of creating a bare-bones form. *Informix* will prompt for the name of the new form and the names of the tables to be included in it. Such "default" forms are useful for prototyping; in a real application an editor would be used to paint a more elaborate screen.

Once table selection is complete the form will be compiled, and may be used immediately to enter data. The source code for a default screen using both tables in the "test" database is shown below:

```
database test
screen
{
personnel_id     [f000  ]
first_name       [f001      ]
last_name        [f002      ]
address          [f003    ]
city             [f004      ]
state            [a0]
zip              [f005 ]
comments         [f006        ]
job_number       [f007    ]
job_name         [f008      ]
job_leader       [f009  ]
start_date       [f010    ]
end_date         [f011    ]
}
end
tables
people
jobs
attributes
f000=people.personnel_id;
f001=people.first_name;
f002=people.last_name;
f003=people.address;
f004=people.city;
a0=people.state;
f005=people.zip;
f006=people.comment;
f007=jobs.job_number;
f008=jobs.job_name;
f009=jobs.job_leader;
f010=jobs.start_date;
f011=jobs.end_date;
end
```

The source code for a default form has the same general structure a custom-built form would have. The source code begins with drawings of the screens that make up the form. Any areas that will contain information from the database are delimited with brackets ("[]") and assigned a "tagname." Tagnames are placed just inside each set of brackets in the source code for a form. Anything outside the brackets (field labels, decorative flourishes, and the like) will be displayed just as drawn. Default forms simply use column names for labels; most designers opt for something more descriptive. Curly brackets ("{ }") are used to mark the beginning and end of each screen in the form.

An "attributes" section follows the screen definitions. Here each tagname is assigned to a column from the database using a simple "**tagname = table.column**" syntax. Any other attributes the designer might wish to ascribe to the field can also be assigned at this point. *Informix-SQL* supports about 18 different "attributes," which range from display and formatting niceties to verification and lookup specifications.

Following the attributes, the designer may include instructions which control master/detail relationships between joined tables, embedded calculations, and conditional "branching" during data entry.

"Default" forms contain all the columns from every table used by the form; they provide a natural mechanism for "selecting" whole rows from a table. However, a designer can pick and choose which columns he or she wishes to use in a form; each form can represent a different "projection" of the data.

"Joins" between tables are accomplished in a particularly elegant way in Perform screens. The "attributes" section of the screen's source code is simply modified to allow a single "tagname" to refer to more than one column from the database.

In the code listed above, the **personnel_id** and **job_leader** columns could be joined by modifying the description of tagname f000:

```
attributes
f000=people.personnel_id;
    =jobs.job_leader;
```

In addition, tagname f009 would be deleted from both the screens and attributes sections of the form. The effect of joining tables in a form will be discussed below.

The form serves as a kind of window on the datafiles. A menu at the top of the screen lists the available commands, and the screens appear just as they were drawn in the form specification. Commands are executed by typing a single letter.

No matter how many tables are represented in a form, only one table at a time can be "active." The name of the active table appears in the upper right hand corner of the screen, and any fields from that table are framed in delimiters (by default "[]"). In multi-table forms, the "Table" command can be used to make any other table in the form of the active table. In forms containing joined tables, the "Master" and "Detail" commands can also be used to activate other tables.

To add records using a Perform screen, the operator simply types "a". The cursor then jumps to the first field available for data entry, and the form can be filled out with the operator pressing return or tab to conclude entries into each field. As the user finishes each record, ESCAPE is pressed to add the screen's contents to the database.

Querying requires only that the user press "q" and then move the cursor around in the fields displayed on the screen, entering the values to be searched for. Once the values are entered, pressing ESCAPE executes the query. A count of the number of records satisfying the query is given, and the first hit is displayed while any other hits are queued up for display. These records make up the "current list," and the user can browse through these records using the "Next" and "Previous" commands.

Joining tables in a form can have spectacular results when queries are run: querying the active table will automatically retrieve and display records in those "inactive" tables that the active table joins.

Of course there may be a "one to many" join between the two tables: one record in the active table is joined to several records in an inactive table. As with any query, the first such record in the inactive table will be displayed. To see the rest, the "Detail" command makes the subsidiary table active and queues the records for display. The "Master" command reactivates the table originally queried.

All in all, there is not much that cannot be done with *Informix-SQL*, and the tools that it provides (SQL, Perform, and Ace) are surprisingly easy to learn. These modules give the user a choice of operating styles for working with databases.

To use SQL, you must know the structure of the database and be willing to do a lot of typing while composing your queries. Your reward will be an ability to create ad hoc joins between tables and pinpoint retrieval of just those database columns you want to see.

On the other hand, Perform provides a "form-driven" style of database manipulation. This requires less awareness of the database structure, gives a satisfying visual representation of the data, and simplifies data entry. But the form-driven style lacks some of SQL's flexibility.

Of course, the forward-looking souls at Informix are not unaware of these trade-offs. Their solution is a dedicated database language, and *Informix-4GL*, a fourth generation extension of *Informix-SQL*, is now on the market. ☐

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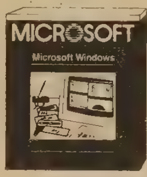

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CP/M

Great Word Processors I Have Known

By Robert D. Athey Jr.

I use three word processors — *Perfect Writer*, *NewWord*, and *VDO*— pretty regularly. Each has its particular strengths and is well suited to particular situations. Here's a look at some of the special features of each.

Perfect Writer

When I first bought my Kaypro II about four years ago, *Perfect Writer* was bundled with it. I like the program for a number of reasons.

First of all, I write a lot of technical stuff with footnotes and endnotes, so *Perfect Writer*'s automatic footnote/endnote numbering and placement are particularly convenient for me.

Secondly, the program has always had multiple buffers and windowing capabilities for looking at other text files— which caused me to wonder what all the excitement was about when all those windowing word processors were released for MS-DOS computers last year.

A third feature of *Perfect Writer* is that it works in ASCII (no strange soft hyphens or soft carriage returns or other bits of weirdness that other word processors seem to have). This feature means you can zip along while programming, and not worry about "Upper Bit" intrusions when you try to run the program.

A fourth important feature is *Perfect Writer*'s ability to format a file in a variety of ways according to your need of the moment. To clarify for those not familiar with the *Perfect Writer* product family: *Perfect Writer* is really a series of separate programs— *Perfect Writer* is the text editor, with which you can imbed (in ASCII) some commands the computer will read in the *Perfect Formatter*. *Perfect Formatter* can format a file to be printed, incorporating all the boldface/underline/margin/spacing commands you imbedded in *Perfect Writer* as language readable by your printer. Alternatively, you can convert the file to a series of ASCII pages to be read on the console, or even just stuffed into a computer file. The *Perfect Formatter* program converts your text file, along with imbedded visible commands, to a new file having the same filename, but substituting a new extent. Thus, it becomes FILENAME.FIN instead of the FILENAME.MSS you were working on in *Perfect Writer*. Formatting to file allows you to see exactly the spacing/pagination/indentations you'd see on a printout — without wasting the paper. One trick I use for modem transmission of text to an editor is to format the text file to a *.FIN file, which I can check to see if it is what I want, and make any changes I need at that time. I usually rename the file before sending it off on the modem. The *Perfect Writer* people were, once again, ahead of their time— in this case with a modest version of WYSIWYG.

Perfect Writer is also unusually nice to the klutzy typist (my fingers are large and always hit two keys at a time). Special commands let you transpose letters or words while you edit. There's virtually no limit to the size of the file segment you can pick up and move, either—I've never run into any trouble with limits, and I pick up 20K buffers for insertion quite frequently.

Perfect Writer is not without its drawbacks. There are few graphics capabilities built in, although there are ways to get around this problem: I've used spreadsheets as low precision plotters, and *Rembrandt* from Xpert Software can insert 80 column by 24 line graphics. Others have done special books or columns on how to insert special character strings as computer interrupt commands, producing some bordering or graphics, Greek letters, or Kitikana Japanese characters. I suppose the key point is that when one learns a program well, one can always work around the drawbacks by cobbling up a little procedure.

Another drawback is that the main program disk is filled to within 1K of capacity with writer/formatter/printer/swap files and a menu. There's a shareware alternative available called *PWMENU*, which is 2/3 smaller. It was written by Douglas Sears of Eugene, Oregon, who asks for a contribution if you use and like the software. To use *PWMENU*, you delete the *Perfect Writer* "MENU.COM", rename the "MENU11.COM" to "MENU.COM" and copy it onto the *Perfect Writer* disk.

PWMENU is a distinct improvement on the *Perfect Writer* "MENU.COM", and not just for the 13 – 14K disk space it saves. It lists the available printers that you can format for, and saves the error messages (temporarily— you wipe them out by hitting a key) from the formatting/printing operations. You can call up a sorted directory that shows how big each file is (instead of the non-sorted unlabeled directory of *PW*), and save it temporarily while you're setting up the edit/format/print command.

I first encountered *PWMENU* when a BAKUP member asked me to see if it was compatible with the Plu*Perfect CP/M 2.2e. It worked like a charm. I have since tried it on a KayComp (the Non-Linear Systems Corp. product that was to become Kaypro— had a serial number near 2500!) fitted with Pro-8 speed-up and other goodies. Again, it worked like a charm.

Douglas Sears actually made up two versions of *PWMENU*, one for the old Kaypros like mine (version 1.1) and another for the newer, graphics-capable (post '84) Kaypros (version 2.1). As you can see, I can only throw bouquets at Version 1.1, but throw them I do.

NewWord

Another program I've used a lot over the past 18 months is *NewWord*, the NewStar Software improvement on *WordStar*. It has several features I like a lot, including the capability to chain files for printing over several disks. I've used it to do proposals having graphics inserted by the *Rembrandt* program, and it's great for putting your writing in *WordStar* format for the benefit of those editors who insist on it. It also has a mail merge function I use quite a bit.

You can use a great little public domain program to convert your *NewWord* files to two columns per page, too. The program is written in BASIC, so you need to use your BASIC compiler to run it. When you call the program up, it asks which file you want "two-columnized," then generates the two column style file from your text file. This two-columnized file is named COLUMN2.PRT, and can be printed as is using the *NewWord/WordStar* print commands, or modified with the *NewWord/WordStar* non-document mode to add page numbers, or to add underline/boldface commands, etc., before printing. The advantage of printing in two columns is that you can stuff more characters onto a page that way— I don't recall the exact figure, but the savings are impressive.

NewStar, publisher of *NewWord*, was recently acquired by MicroPro. I was surprised, but it makes sense in some ways. The MicroPro takeover means that *NewWord*'s good points will be incorporated into the upcoming new version of *WordStar*. However, from past experience it seems likely that the new version will only be released in an MS-DOS version, and CP/M users will once again be left in the cold. I strongly recommend that you write to MicroPro's customer service department to express your interest in having updated CP/M versions of either *WordStar* or *NewWord*. You know I'll write . . .

VDO

I can't forget to praise the *VDO* public domain word processor I wrote about some time back. It's very handy for a lot of things—I've installed it on my telecommunications disk, on my spreadsheet disk (to "mend" the spreadsheet files for *SIDE2* by taking out the control characters) and even on my word processing disks (to quickly print a file in boldface without loading up a huge WP program). Indeed, I will often print the document I formatted to file in *Perfect Writer* with *VDO*.

This program is also great for stringing small files together, such as the screen shots made by using *XSCREEN* to demonstrate a program's menu or game board. I also use *VDO* to edit 80 column screen shots to a 78 column width, so there are fewer problems for an editor after modem transmission.

Speaking of public domain software, I've recently heard that one of the best sources of PD disks at $5 apiece has moved. The BAKUP CP/M library of public domain disks is now at 1739 Ward Street, Berkeley, CA 94703, (415) 849-3025. If you want a PD program, it's probably there. ☐

Bob Athey has over 20 years of experience working on computers and runs his own company on chemical consulting and contract research. He can be reached through MicroTimes or at (415) 526-3541.

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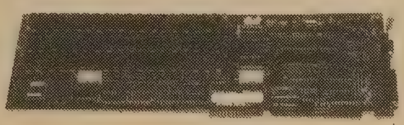

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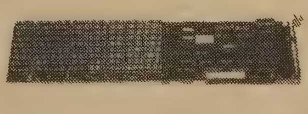

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AMIGA/COMMODORE

Commodore's New Year: Forecasts And Speculation

By Matthew Leeds

Happy new year! Now that we're past the holiday hazards of hangovers, gift returns, and eggnog, it's time to face forward and start the new year with decisive action and a smile on our faces. We Commodore fanatics have lots to look forward to, and I'm going to speculate on some of the possibilities.

Rumors have been flying for months regarding CBM's plans for new machines. By now its IBM compatibles should be available, unless plans have changed. I will not spend any time on them, as they add nothing new to the sea of clones drowning the distribution channels, and are not priced low enough to create a huge demand. Since CBM already has production lines working to supply the European demand for clones, its decision to market them in the US will not cost much, and they may pick up a small chunk of market share. More power to them.

The New Amigas

Of far greater interest are the possible new Amiga machines, which have been discussed, shown behind closed doors, and speculated over. I'm not privy to any inside information, so I will just try to put into perspective the various possibilities.

One configuration that's been talked about is the B52, sometimes known as the A500. Several designs have been discussed, but the general trend is for a low-cost Amiga, with an integral keyboard, a single internal disk drive, the power supply removed and converted to a brick (a la the 64C and 128), and some modifications to the ports. This down-scale Amiga would resemble the Atari 1040 in appearance. The disk drive would be moved to the right side of the case, requiring a change in position of the bus expansion port. Rumor has it that the relocated port has been moved to the left side of the case and turned upside down to avoid massive redesign of the motherboard; this design will create problems for expansion products which use the bus port. Imagine a memory expansion product designed to sit flush to a desk on the right side, hanging in mid-air on the left side.

Other rumored modifications include standard 512K of RAM, Kickstart V1.2 in ROM, and minor (?) changes to the serial and parallel ports. A less often discussed possibility is the removal of the RGB video port in favor of a NTSC and RF only port, as on the 64C. Pricing around $700 – 800 seems to be the target for a CPU and monitor system.

I've checked the prices on Commodore systems (Dec '86) and this is what's available currently. All prices are based on a CPU, single drive, and monitor. A 64C system is $500, a 128 system is $750, and an Amiga system is $1200. You may be able to find slightly better prices if you hunt, but let's use these for discussion. If a down-scale Amiga becomes available at the same price as a 128 system, will Commodore continue to sell and support the 128? Software written specifically for the 128 is showing up in some quantity, but so is Amiga software. The huge base of 64C software has been used as an argument for purchasing a 128, as has the CP/M software base, but a low cost Amiga would create a significant increase in Amiga software development. 128s have sold well, with an installed base of over 500,000, but an Amiga at the same price point might do even better.

What about the 64C? CBM's cash cow has been recased, and priced up about $50, proving once again that the market finds its own value for goods. The production costs on the 64C by now are next to nothing, and as long as the public continues to buy, CBM will continue to manufacture.

If Commodore comes out with a low cost Amiga, what will happen to the A1000? Some insiders have said that CBM plans to discontinue the A1000 in favor of a new, more powerful machine, known by several names; Ranger, A2000, XYZ-killer, etc. The current design is the A2500, basically an A1000 with several expansion slots inside. The case is taller to allow room for the internal card slots, some of which may be IBM compatible.

The current design for Amiga expansion cards is known as Zorro, a 100 pin design that's not compatible with the 86 pin bus expansion port. The A2500 design currently requires a re-design of Zorro cards to a smaller printed circuit board to fit into the case. This new form factor has caused much concern among Amiga hardware developers, who now face three different standards when creating products for the Amiga market. Adapters that plug into the expansion bus allow the use of existing 100 pin cards, but the current limited market for cards and card cages may cause a shakeout among manufacturers before the market and standards stabilize.

Engineers at Amiga are working on a new chip set which will allow the use of 2 MBytes of graphics memory, instead of the current limitation of 512KBytes. It does not seem likely that the new chip set will be included in the current plans for the A2500, and this means that another new Amiga will eventually surface.

How does all of this affect current or potential owners of Amigas? This depends on your planned use and current needs. If you already own an Amiga, congratulations. If you need to add to it, find a reputable supplier for an expansion cage. If you plan to purchase an Amiga, don't wait. Given CBM's track record on getting new products to market, you'll be waiting quite a while regardless of what surfaces. All of this is just speculation anyway, and is only fit for whiling away the hours until we see what finally happens. Consider it mostly for its entertainment value.

The bottom line is as it ever was. Commodore markets great computers, although it sometimes has a hard time letting the market know about them. Third party hardware and software developers create great applications to take advantage of the power available, and often overcome any inherent problems in the design. Witness fastloaders for the 64, keypad enablers for the 128 in 64 mode, and hundreds of dedicated programmers for the Amiga. Hang in there, maintain a sense of humor and patience, in the long run things either work out or they don't.

GEOS Update

It's time for an update on GEOS. The new version 1.2 has been out for awhile, but several new applications have also arrived. *geoDex* is a desktop application that files names, addresses and telephone numbers, along with two sort codes. It's your standard file manager type program, with the expected features. It comes with *geoMerge*, a mail merge program that combines a *geoWrite* document with a *geoDex* list.

The *GEOS Deskpack 1* has an icon editor, calendar program, Black Jack game, and a graphics converter that will let you use files from *Print Shop*, *Print Master*, and *Newsroom* with *geoPaint*. *Fontpack 1* has 20 new fonts with some very useful and clever styles. New device drivers are available to handle light pens, mice, and several new printers, including the Apple LaserWriter. If you don't feel like buying a LaserWriter yourself, you can upload your files on Quantum-Link, and Berkeley Softworks (415/644-0883) will download them, print them out for you, and mail them back. Naturally your account will be billed, but the charge is around $3 for the first page, and less for each additional page.

The RAMdisk and new mouse drivers are done, and the 128 version of GEOS will be shown at the Winter CES in Las Vegas. I'll have a report in one of the next two columns, depending on deadline.

And Now A Word From Our Columnist

Gang, I've been writing this column for over a year now. I'd like to hear what you think of it. Send in your suggestions, but keep them clean. What would you like to see in here—tutorials on software, inside gossip, news and info, general reports on new products, mini-reviews, weather reports? Believe me, I'm having fun doing this, but sometimes it's like echo canyon without the echo. I'm not complaining, but a little feedback would be nice once in a while. Anyway, I appreciate your readership.

That wraps it up for this month. Thanks in advance for your suggestions. See you next time. ☐

Matthew Leeds is a writer/photographer specializing in high technology. He has been involved with Commodore computers since 1983, and co-produced the Commodore Show in San Francisco. Copyright © 1986 by Matthew Leeds. All rights reserved.

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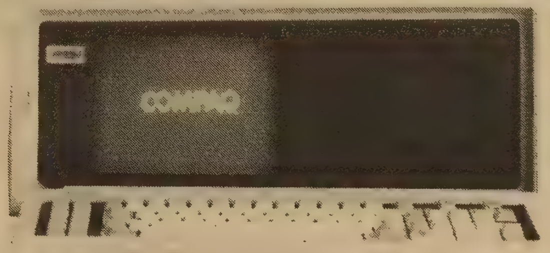

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ATARI ST

COMDEX Fall 1986: The ST Has Arrived

By Helmi Kobler

COMDEX Held in Las Vegas every year in November, this is *the* trade show for the microcomputer industry. Here you'll find just about every somebody, every nobody hoping to be a somebody, and every somebody about to become a nobody in the microcomputer business. Atari was there in full force, and by the time the show was over it had conclusively proved itself a "somebody" in the micro biz.

Atari started the show on the right foot, moving its booth from last year's site in one of COMDEX's side halls to a better site—near the entrance of the show's main hall. They brought along some 65 third party developers, who showed their products at 40 stations within the booth. Atari and the developers kept the booth buzzing with activity, and when show attendees started piling in, the place was quickly transformed into a jam-packed madhouse. Neil Harris of Atari joked that it was easy to visit the stations within the booth ... if you were a fullback!

Exciting new ST products abounded. New hardware made the smallest showing, but what did appear turned out to be solid stuff.

NEW HARDWARE

One handy new product was JNL Industries' Monitor Box. The $59 device lets any ST, 520 or 1040, send a composite video signal, allowing it to be used with most TVs or composite monitors on the market. You can also hook a VCR into the Box and record images off your monitor screen. And an Audio Out RCA jack will send any sound from your ST to a stereo.

Video Touch had the most innovative ST hardware hands down. They've turned an everyday ST into a touch-screen data entry system that can be put to use in a number of commercial fields. The demo system shown was designed as a cash register alternative for restaurants, where the operator need only touch a modified SC1224 color monitor screen to make menu selections. The touch-screen system can also be adapted for sales, education, medical, and distribution applications. An option for networking multiple systems is also being planned.

Atari had some hardware of its own too. A blitter chip-enhanced 1040 was running an impressively fast version of Atari's "bird" demo, moving several birds across a color screen with the same speed at which a standard ST moves only one. You can hope to see the blitter chip package, which includes a new set of ROM chips, in early 1987 for $120.

Also there was Atari's SX212 external modem. For the low, low price of $99.95, the SX212 gives you 300/1200 baud speed and full Hayes compatibility. Other features include an internal speaker, LED indicators and an RS-232 port, making it a general market modem and available to other machines besides Atari's.

I was hoping that there would be much more ST hardware from Atari to write about, especially since many folks anticipated that Atari would use COMDEX to show off a laser printer prototype, its MS-DOS emulator, the 2080 and 4160 STs, and the nebulous AMY sound chip (or is it a cartridge??). Unfortunately, none of these products made appearances. The official excuse was that none of the products would be available before Christmas, and would therefore be kept secret so as not to hurt holiday sales of existing hardware.

Word got around that Atari did indeed show a new machine in Vegas, only it wasn't on the COMDEX floor and the preview was restricted to a select few. I did my best to scrape up some info on the machine—it's called the ST1; it will have one to four megs of RAM and be modular in design with a detachable keyboard. The machine's footprint is a square foot and its modules are stacked on top of each other. The first module houses the CPU, a standard double-sided ST floppy drive and a full 68000 bus brought out to a connector in the back! The second module contains a 3½" 20 meg hard drive. I was told that the ST1 will sell for under $2,000 and should be available in the first quarter of 1987. That means you should look for it near the middle of the year.

NEW SOFTWARE

New ST software was easily the highlight of Atari's booth, confirming the "Atari Means Business" theme by showing the industry that the ST was performing just about any task a micro could be expected to do.

Desktop publishing was a perfect example. *Fleet Street Editor* from Mirrorsoft of England and *Typesetter Elite* from XLEnt Software were two personal publishing products shown, but the real biggie came from Softlogik Corp.—a powerful WYSIWYG package called *Publishing Partner*. The feature list goes on and on: you can import text and graphics from other ST programs, adjust fonts, character sizes and line-spacing, and easily create and move multiple columns anywhere on the design page. *Publishing Partner* also supports the PostScript driver found in Apple's LaserWriter, not to mention popular dot matrix printers from Epson, Star and Okidata. It should be out by the time you read this for $149.

Other productivity software such as word processors, databases and spreadsheets were also shown. TimeWorks had its *Word Writer*, *Data Manager* and *SwiftCalc* packages, while Abacus came with *TextPro*, *DataTrieve* and *PowerPlan*. Quickview Systems had its *Zoomracks II* database and Royal Software showed the *EZ Calc* spreadsheet. VIP Technologies also managed to finish the GEM version of *VIP Professional*, the *Lotus 1-2-3* clone, and Atari brought Microsoft *Write*, a port of *Word 1.05* for the Macintosh. WordPerfect Corp. was also showing an ST version of *WordPerfect* at its own booth.

On the graphic side, it was a pleasant surprise to see a big Amiga supporter like Aegis Development show up with an ST version of *Aegis Animator*! The program looks like a real winner, and I understand it has a few new features that the Amiga version lacks. Batteries Included's *Degas Elite* was there also, demoed by the author himself, Tom Hudson. And although it's taken a year to get here, *NEOchrome 1.0*, the final version, was shown by Atari.

The ST also found itself a place in the CAD world. Several CAD packages were shown, such as the *Graphic Artist* from Progressive Computer Applications, *CAD 3-D* from Antic, *PCBoard Designer* from Abacus, Foresight Resources's *Drafix I* and Generic Software's *First CADD*, the last two being ports from the IBM world.

And speaking of IBM, Paradox Enterprises had the *MS.EM* IBM emulator to show off. The $69.95 package will work with both 3½" and 5¼" disk-based software, provided you have the necessary drive, and has been successfully tested with *WordPerfect*, *WordStar*, *Lotus 1-2-3* and *dBASE III*. Being software based, *MS.EM* runs these programs at only 60 percent of IBM speed, though.

AND MORE...

I'll wrap up with a few miscellaneous products. Digital Vision introduced ComputerEyes for the ST, a color digitizer that allows you to control contrast, brightness and color through software. Educational packages also appeared, including the SmoothTalker series from First Byte, which teaches basic language and math skills through speech synthesis. Great music was provided by four major MIDI developers: Beam Team, Electronic Music Publishing, Hybrid Arts and MidiSoft. And there were games too. Michtron, FTL Games, Electronic Arts, Activision and others provided comic relief and kept people smiling with some fantastic entertainment software.

Atari's performance at COMDEX gets better each year. At last year's show, the big question was whether the new STs were catching on or not. This year everybody seemed to agree that the answer was a resounding yes. The show was a definite success for Atari, and if this year's COMDEX is any indication, Atari and the ST can look forward to a great year.

Helmi Kobler took his first step into the computer world in 1983 when he walked out of Macy's with an Atari 800 in his arms. Still an Atari user, he's now inseparably attached to his ST. He can be reached through MicroTimes or e-mail <helmi> on The WELL at (415) 332-6106.

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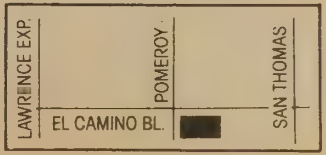


R:BASE System B—The Agony And The Enter Key

By Warren Sirota

Part I

Lamentable as the pun is, it more or less accurately reflects my feelings about the *R:BASE* experience. *R:BASE System V* is agonizingly close to being an ideal database system, and Microrim has come closer than anyone else to creating an effective system of "programming by hitting the Enter key." The product is a major evolutionary step forward from *R:BASE 5000*, a product which contained one of the best application generators on the market. Its roots go further back still, to *R:BASE 4000*, an early competitor of *dBASE II*, and to mainframe database systems originally developed for NASA. Microrim has long trod the rocky and often unmarked path towards understanding what "application development" is all about, and the experience shows. However, they have not quite reached the end of that road with *System V*.

Regular readers will be aware that I am a great fan of application generators; for me, every line of code is an opportunity for a programming error, and every three lines of code can be arranged in six ways, exactly five of which are wrong. I believe in very high-level languages; I also believe that my time (and database programmers' time in general) is better spent on system analysis and design than in writing code to handle all of the administrative baggage that is necessary in a database application: standard types of reports, add/change/delete routines, etc.

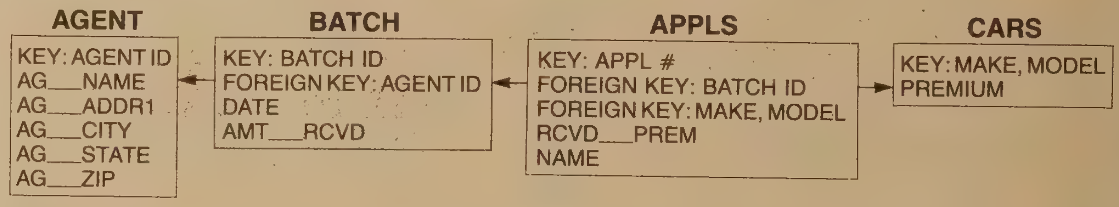
The theory behind application generators is that there are many tasks common to all applications, and that it's possible to pick and choose general-purpose routines and paste them together with a little bit of customization. In the course of developing these systems, I think that the various vendors involved discovered that the variety of tasks which need to be handled to make such a system effective was greater than anyone anticipated. *R:BASE System V* contains many more options in the Applications Express than were available in *R:BASE 5000*, and really seems to be closing in on the problem.

SAGA OF AN EXAMPLE DATABASE

The war of the specifications (which has more fields allowed per record, how many characters per field, etc.) is sometimes meaningful in comparing database systems, when you run into some operational limit like "no memory left" and have to start devising awkward workarounds. However, most applications don't strain the capabilities, in this sense, of micro DBMS systems these days. In this context, the only specification that is truly meaningful to me is "mean time to create a Standard Application." Unfortunately, there is no such thing as a Standard Application.

I gave *R:BASE* a real test, one that would exercise its abilities to handle several different tables and the relationships among them. I used the specifications for a job that I had bid on for a local insurance company. This company would get a batch of insurance applications and a check for the total premium from an agent, and the program would be responsible for checking that the premium listed for each application was correct; it would then add up the premiums and check that the total matched the check. Several reports would be generated from this information.

FIGURE 1



A diagram for the database design is shown in Figure 1 (already we have one aspect of *R:BASE* open to minor criticism—it doesn't generate graphic diagrams of databases showing relations among its tables. *PC/FOCUS* provides this type of diagram, *dBASE III* does not). It is presumed that the CARS table is filled in first, and is more or less stable—rates don't change every day.

One aspect of this database design is a general design point worth noting, especially where monetary values are concerned. Notice that the application table contains a field called RCVD_PREM, which contains the premium amount reported on the application (no check was received on an per application basis—the check would apply to an entire batch of applications). Isn't this redundant information, though? If we have the make and the model of the car, can't we look up the premium in the CARS database? Isn't keeping that information in the APPLS table a violation of relational theory's prohibition about keeping one piece of data in two places?

Well, not exactly. The answer to this conundrum is that there are actually two pieces of information here: the amount that the tenderer thought was correct, and the amount that we have stored in our CARS table. Also, consider the consequences of a change in the PREMIUM amount in the CARS table. If this were to happen, there would be no way to find out the amount paid for that particular policy without the RCVD_PREM field. For the same reason, it is necessary to keep a record of the amount actually received for the batch in the AMTRCVD field of the BATCH table.

Defining the database in *R:BASE* is a piece of cake. The process is more or less equivalent to that in *dBASE*—you type in field names, choose characteristics, etc. There are several excellent aspects of this operation. Firstly, you can define *computed* fields, which are fields that don't hold data in and of themselves, but rather are the result of calculations performed on existing fields. Secondly, when you type in the same fieldname in several different tables, *R:BASE* knows that you intend this to be a common field for relational (lookup) purposes, and automatically ensures that the fieldtypes specified are identical. It also shows "knowledge" of this relationship in several other contexts, as we shall see later.

Indices can be created for any field or expression (if the expression is defined first as a computed field). *R:BASE* differs significantly from *dBASE* in this area. When you retrieve data in *R:BASE*, you can include a "SORTED BY" clause in the command. *R:BASE* does an implicit sort, which will be quicker if an index exists. Also, direct retrieval of a record is faster if an index exists. However, the actual code that you write doesn't know whether an index is in use or not, and it is impossible to update a table without updating its indices, in contrast to *dBASE*, which allows you to do both. This treatment of indices offers some advantages in terms of maintainability, although there may be a performance price. In *dBASE*, the programmer controls which indices are open at all times. This opens the possibility of controlling this in an absolutely optimum fashion, but it also opens up the possibility of making mistakes. And what *dBASE* programmer has never forgotten to open an index when needed?

Continued next month

Copyright ©1987 by Warren Sirota. All rights reserved. *Warren Sirota is a database consultant with experience in a wide range of languages. He also composes and programs computer music. He lives in Oakland and can be reached at (415) 482-3979.*

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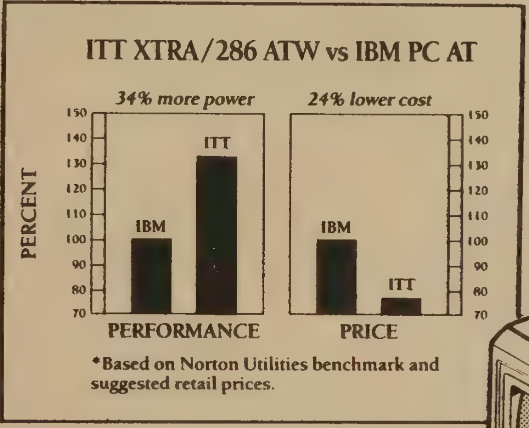

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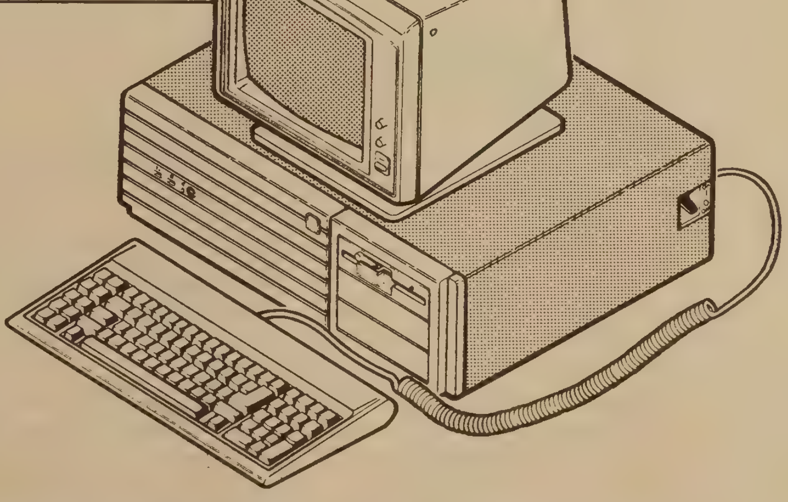

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Packetgate—The User Loses

By Brock N. Meeks

Even as Washington is trying to cope with Irangate, a similarly hush-hush process is underway which will profoundly affect and probably cripple the ethernet. I call it "Packetgate." The similarities include hostages, quiet negotiations, clandestine collaboration, and a reliance on the free enterprise system to "fix a problem."

The situation is essentially this: packet-switched networks, such as Telenet and Tymnet, may soon be driven out of business by a proposal before the Federal Communications Commission (FCC). This proposal, if approved, will reregulate packet-switching networks, and subsequently eliminate free local telephone access to those networks.

"The result of this proposal is that anyone accessing a commercial online system or information service, like CompuServe or The Source, from a packet-switched network could eventually see rates double or triple," says Philip M. Walker, vice president and regulatory counsel for Telenet Communications Corporation. "Those using Telenet's PC Pursuit might be looking at a cost increase of three or four times."

The initiative for this new proposal, called Computer Inquiry III, sprang quietly from the Bell Operating Companies (BOCs) and AT&T. It is no surprise that these companies, which supply telephone service to the majority of America, will benefit the most from FCC reregulation of packet-switching networks.

DEREGULATION AND COMPETITION

At the heart of the matter is the way packet-switching networks are defined. In 1980 the FCC formulated rules under its Second Computer Inquiry, better known as Computer II, that defined the difference between "basic services" and "enhanced services."

Basic services are regular local and long-distance telephone services. Enhanced services are computer-based services, like packet-switched networks, data base and online services, and services that offer protocol conversion.

The Computer II Inquiry ruled that basic services would continue to be regulated as they had always been. However, the FCC's ruling on enhanced services dictated the implementation of deregulation, which fostered competition. The ruling prompted several companies to enter the packet-switching market, including the BOCs and AT&T. Significant price reductions resulted from the competition among these packet-switching companies.

The FCC also ruled that the BOCs and AT&T had to keep separate accounting figures for their basic and enhanced services. This prevented the Big Boys from subsidizing their enhanced services with revenue from the lucrative basic services. In addition, the FCC ruled that if the Big Boys used basic service telephone lines for enhanced services they would have to give their competitors free access to those same lines. This ruling lets a packet-switched network, like Telenet, offer you and me free access to "nodes" in thousands of cities around the country.

Because the BOCs must offer local-access phone lines to these packet-switched networks free of charge, in accordance with Computer II, the cost of using such services remains reasonable. This current situation directly enables GTE to offer its low-cost PC Pursuit service for a flat fee of $25 per month.

COMPUTER INQUIRY III CHANGES THE RULES

Computer Inquiry III, in essence, is asking, "Should we redefine protocol conversion services as 'basic services' rather than 'enhanced services'? Should we redefine all those companies (packet-switching providers) as common carriers?" The result would allow the BOCs and AT&T to charge their packet-switching competitors local dial-in fees to access their telephone lines. In addition, Computer Inquiry III would allow the BOCs and AT&T to subsidize their own "enhanced services" with revenue from their profitable voice telephone basic services.

This opens a path for the BOCs and AT&T to provide their own packet-switched networks on a non-compensatory basis. According to Telenet's Walker, this would allow the BOCs and AT&T to monopolize the packet-switched services, driving out most competitors.

EXPECT PRICES TO SKYROCKET

The ramifications are obvious: if the BOCs and AT&T can start charging these packet-switched companies to access their phone lines, costs will skyrocket.

"If we had to pay local access charges, it would cost us about $3.60 an hour at the originating end for calls made by users to online data bases and information services like CompuServe," says Walker. "We would have no choice but to pass along these rate increases to our customers." For companies that have their own installed networks, such as CompuServe, costs will also increase.

Early in 1986 CompuServe added a 25¢ per hour "communications surcharge" to all of its connect rates. It was only a foreshadowing of things to come. "If the FCC passes on this thing [Computer Inquiry III] our users are going to be hit with tremendous cost increases. It could make online services prohibitive for all but the affluent," says a CompuServe official who didn't wish to be identified. "If you think there's a gap between computer haves and have nots now, look again. Computer III could lock out a lot of computer haves."

This rate increase would also be a dart aimed right at the heart of PC Pursuit. Because the PC Pursuit network uses modems at both ends of its connection the cost increase would be a double-edged sword. According to Walker, this would impose an additional eight or nine dollar an hour charge on PC Pursuit, a charge which would be passed on to its users. PC Pursuit would most likely die a swift death. A similar fate would befall several of the smaller, independent online services, as well.

Just as we are beginning to see a trend by regional networks, like The WELL, to become accessible via a packet-switched network, we would see the trend come to an abrupt end. And some of the smaller, economical online systems, such as American PEOPLE/LINK (Plink), would have a hard time maintaining their user-base as rates vault from the low $4 an hour range into double digits.

STACKED DECK?

Mark Fowler, Chairman of the FCC, is lauded by the press as a "fair-market zealot." Sources at the FCC claim that Fowler is in favor of this reregulation in the hopes that it will lead to increased competition and a better price structure for consumers.

This is probably not going to happen. According to an official for PacTel, speaking on the condition that he not be identified: "It's no secret that PacTel badly wants a piece of the packet-switching pie. They are pushing—hard—for passage of the proposal; all the BOCs are. It would provide an easy way to squeeze out the competition." He added that the FCC advisory committee heavily favors passage of the proposal. If that's true, it's all but a foregone conclusion that the FCC will vote in favor of reregulation.

If the proposal passes, as it is likely to, anyone with a modem would be held hostage. The BOCs could charge whatever they wanted for access to their own packet-switched networks, without the fear of strong competition. Subsidies from voice telephone revenues would allow the BOCs to move into packet-switching with little risk. Telenet, Tymnet, and the like cannot possibly compete with the deep pockets of the BOCs in this type of head-to-head competition.

Although the proposal carries startling changes for the online community, word has not circulated. Like the National Security Council's hushed negotiations and obscure dealings, the FCC has made little attempt to publicize this proposal.

Yet FCC approval of Computer Inquiry III would "have a major impact on anyone using a packet-switched network to access online bulletin boards, data bases, or information services aimed at the residential user," says Walker. "They are going to get creamed if this happens."

WRITE NOW

The proposal is going before the FCC soon. It's time to get on your word processor and write. Address your letters to:

The Honorable Mark Fowler
Chairman of the Federal
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Washington, D.C. 20554

Tell Mr. Fowler that reregulation will decrease competition and drive prices up—not down. Refer to Computer Inquiry III in your letters.

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Brock Meeks is a San Diego-based freelance writer whose telecommunication costs already rival the national debt. Copyright ©1987 by Brock N. Meeks. All rights reserved.

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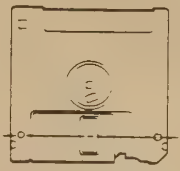

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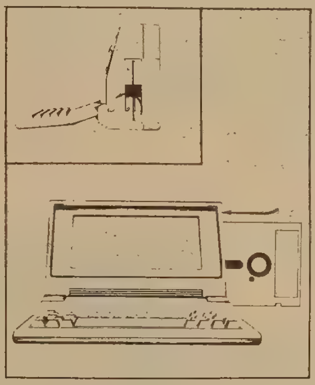

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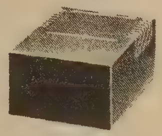

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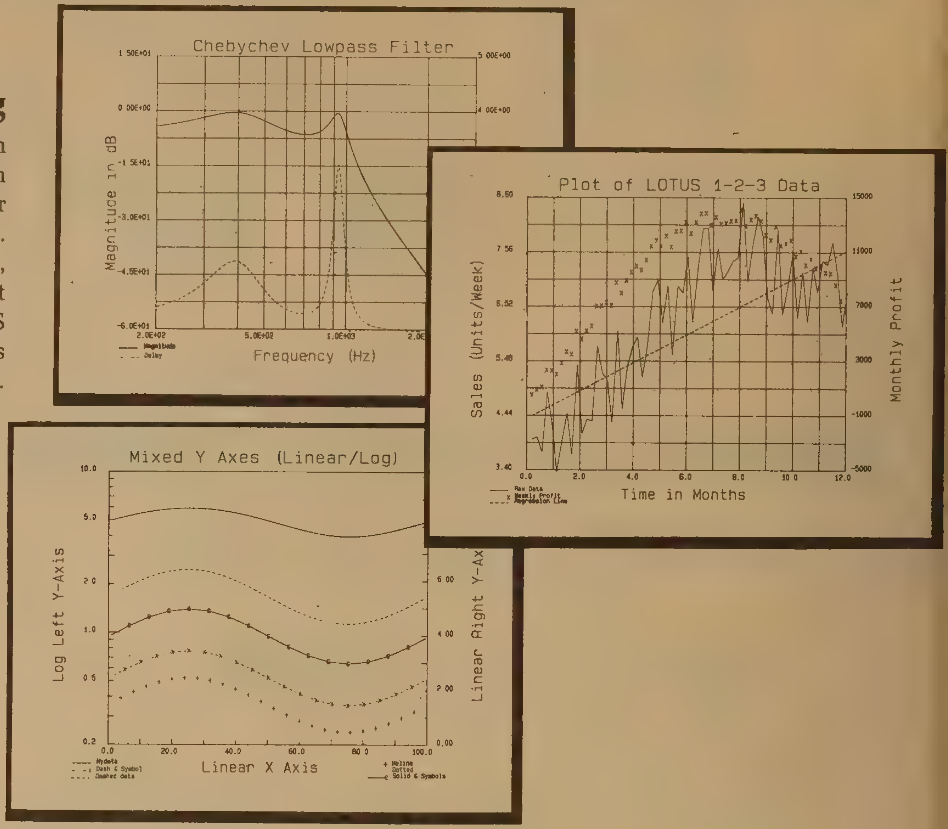

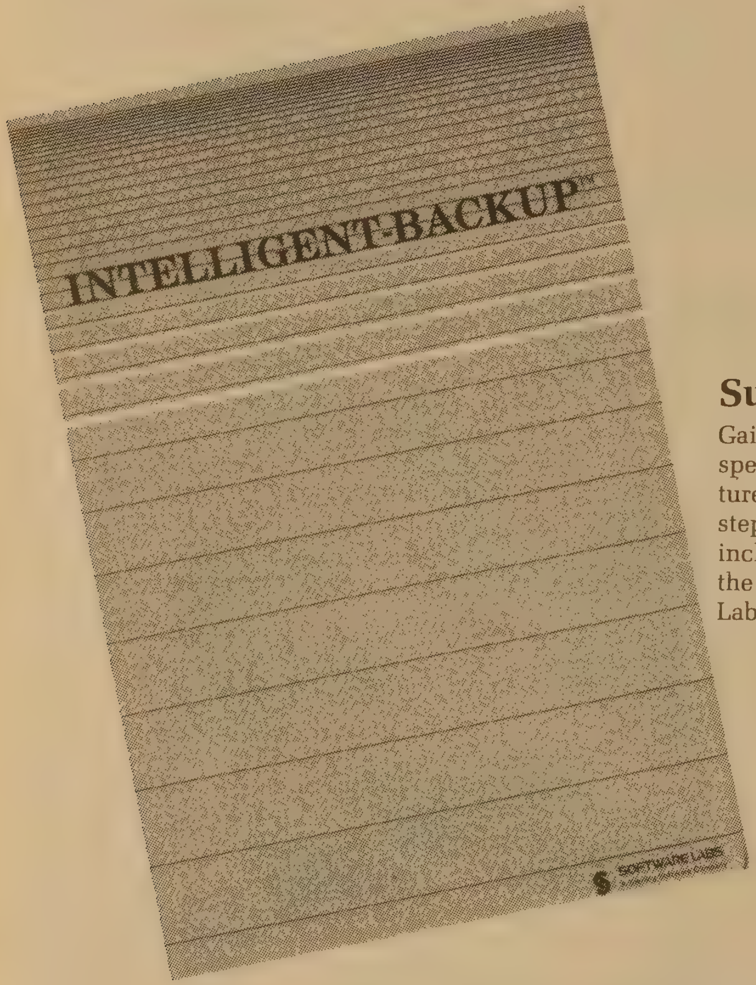

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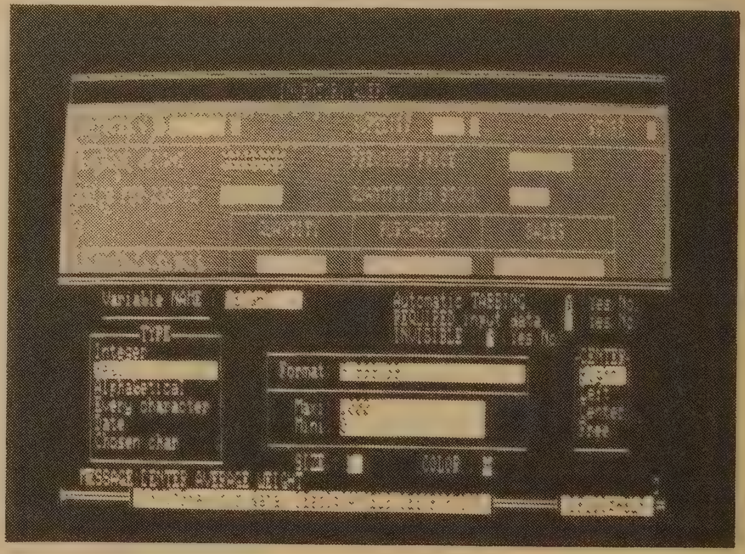

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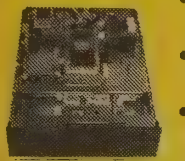

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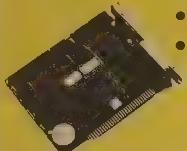

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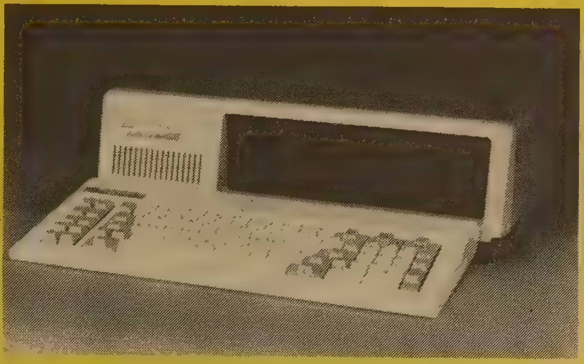

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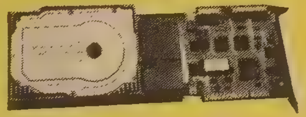

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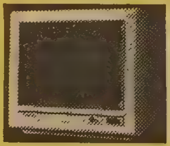

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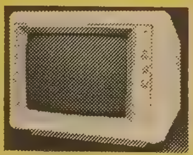

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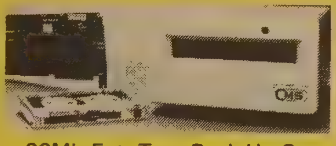

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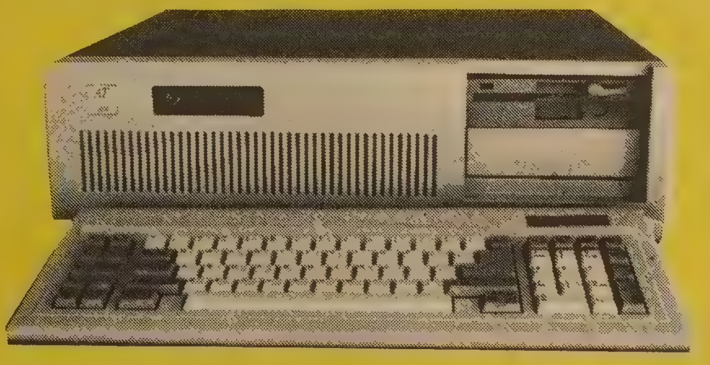

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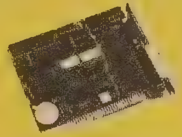

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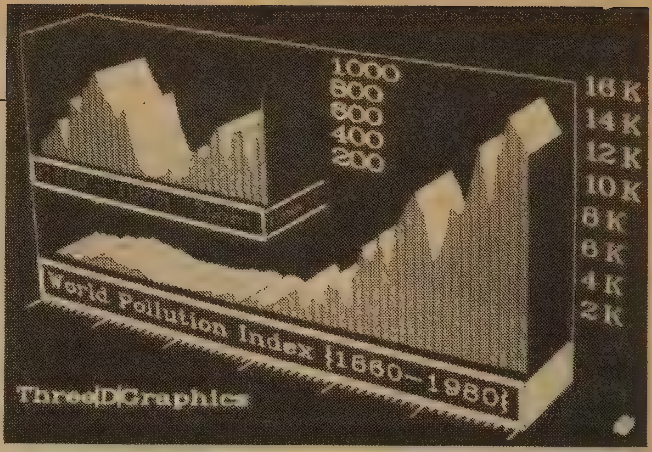
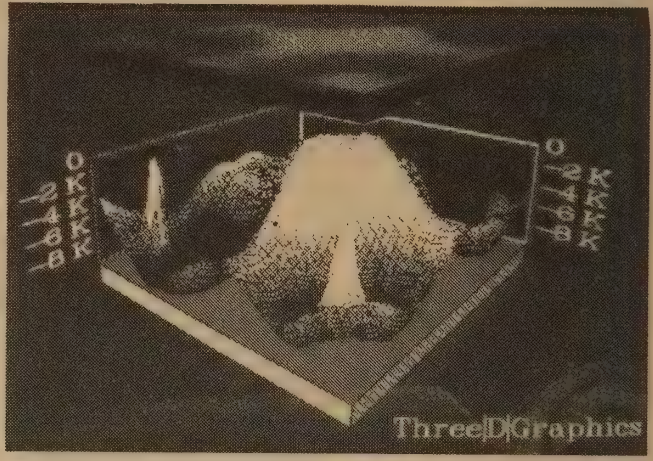
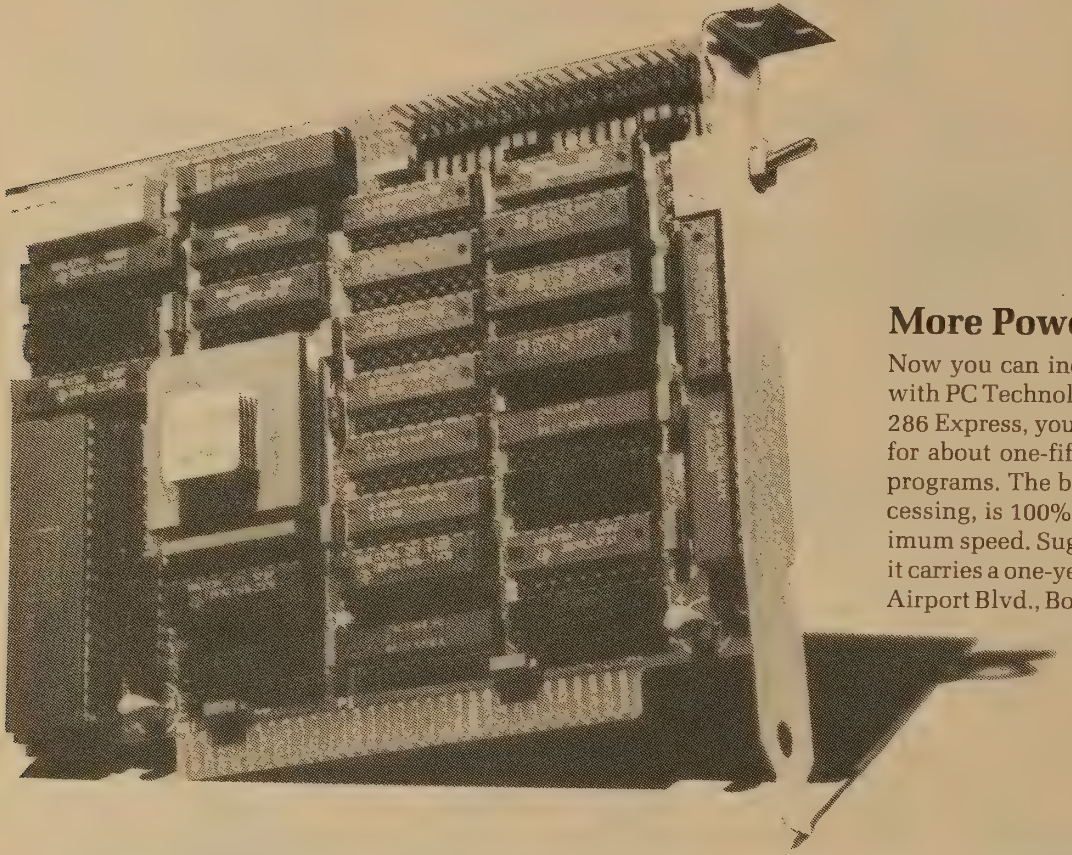


A Different Perspective

Three-D Graphics has developed another perspective. Their latest data graphing package, *Perspective II*, contains all the features of their *Perspective* package—like the ability to quickly transform data from spreadsheets, word processors and databases into a variety of 2D and 3D graphs—plus the capability of generating over 400 colors. Graphic presentations become more exciting and understandable. *Perspective II* also has the power to pan, zoom or alter picture perspective. The program is ideal for creating slide shows with features such as dissolve and fade, rapid-fire images and animation. *Perspective II* can also produce camera ready art at 300 dpi resolution. An EGA or compatible graphics controller and 512K of memory are required. It will be available next month at a recommended price of $395. For sales and marketing information, call Celia Cushing-Brawley at Three-D Graphics, (213) 459-7949.





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Now you can increase the performance productivity of your PC by 200–600% with PC Technologies' Improved 286 Express half-slot accelerator card. With the 286 Express, you endow your IBM PC, XT or compatible with the speed of an AT for about one-fifth the price—and there's no need to re-train users or convert programs. The board is easily installed, switches between 80286 and 8088 processing, is 100% software compatible and contains 8KB cache memory for maximum speed. Suggested retail price of the enhanced 286 Express card is $595 and it carries a one-year warranty. Need more info? Contact PC Technologies Inc., 704 Airport Blvd., Box 2090, Ann Arbor, MI 48106, (313) 996-9690 or (800) 821-3086.

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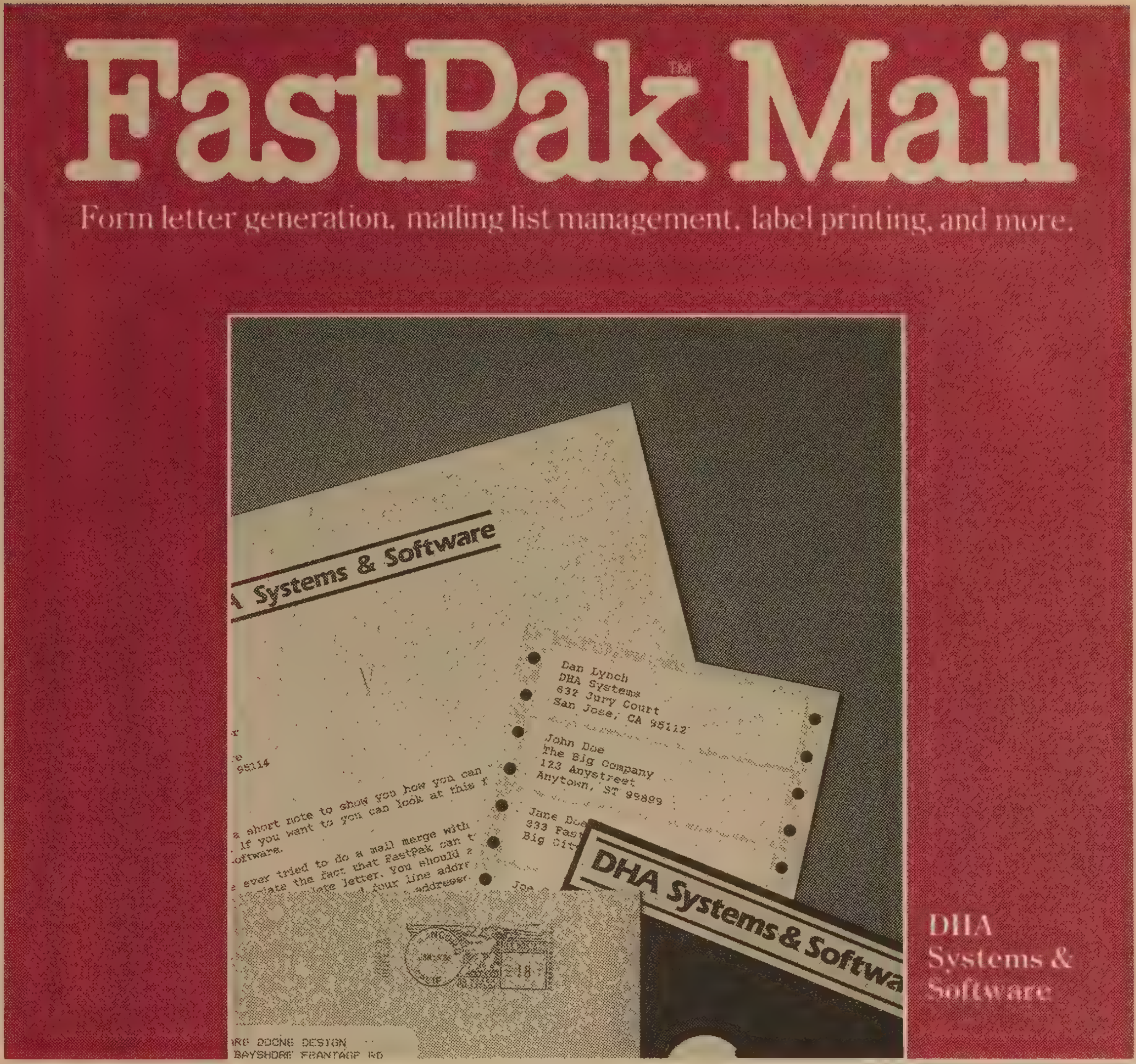
Words & Figures

There's a new *Lotus 1-2-3*(1A) compatible spreadsheet program available for all those folks just dying to write about numbers. *Words & Figures* has all the features of previous releases, like larger spreadsheet size and performance power, plus the ability to switch to word processing and back again. Better yet, you can split the screen to see both words and numbers at the same time. A built-in auditor for tracking errors and cells which contain circular references is also included in the package. *Words & Figures*, which is not copy protected, is available for $195. Contact Lifetree Software, Inc., 411 Pacific St., Monterey, CA 93940, (408) 373-4718.

Make The Connection

The interface specialists at Sunnyvale's Integrated Marketing Corporation are offering two ways for users to make the right connections. Their parallel to serial converter is designed to convert parallel data from a Centronics interface (Input DB-25 Male Connector) to RS-232C serial data (Output DB-25 Male Connector). The serial to parallel converter takes RS-232C serial data (Input DB-25 Female Connector) and converts it to Centronics parallel data (Output 36 Pin Male Amphenal Connector). Both retail for $79.95, include a ten foot cable, support DTR handshaking, and are powered by an external 9-volt power supply. IMC also markets an auto switch peripheral sharing device which enables from two to six workstations to share the same printer. There are six models to choose from: 3 serial in/ 1 serial out ($149.95), 6 serial in/ 1 serial out ($249.95), 3 serial 3 parallel in/ 1 serial out ($229.95), 3 parallel in/ 1 parallel out ($149.95), 6 parallel in/ 1 parallel out ($229.95), and 3 serial 3 parallel in/ 1 parallel out ($229.95). To order, call (800) 621-0854 ext, 309. Integrated Marketing Corporation, 1031 E. Duane, Suite H, Sunnyvale, CA 94086.



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FastPak Mail adds your mailing list names and addresses to letters, inserts names or "boiler plate" paragraphs from other documents in the body, and even lets you pause during print-out to type in extra material.

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And with ProMail extension, you can perform more sophisticated list management functions with lists of over fifty thousand names.

FastPak Mail runs on the IBM PC and PC compatibles, as well as a variety of CP/M computers. It's compatible with most popular word processors, including WordStar, Easy, PFS Write, Microsoft Word, Multimate, Volkswriter, Leading Edge, PC Write, Scripsit, Le Script, Spellbinder, and many, many more. And at a suggested retail price of $79.95 (plus $159 for ProMail extension), FastPak Mail is a genuine bargain.

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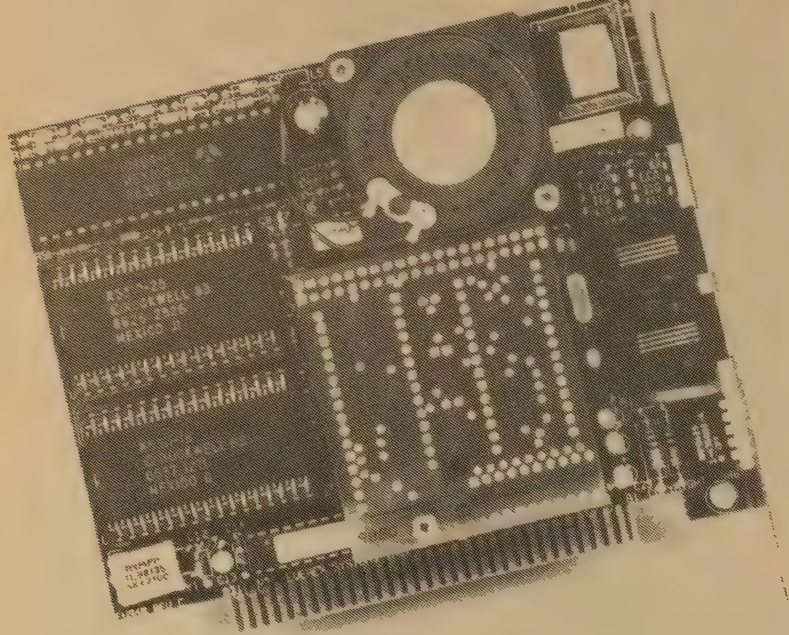
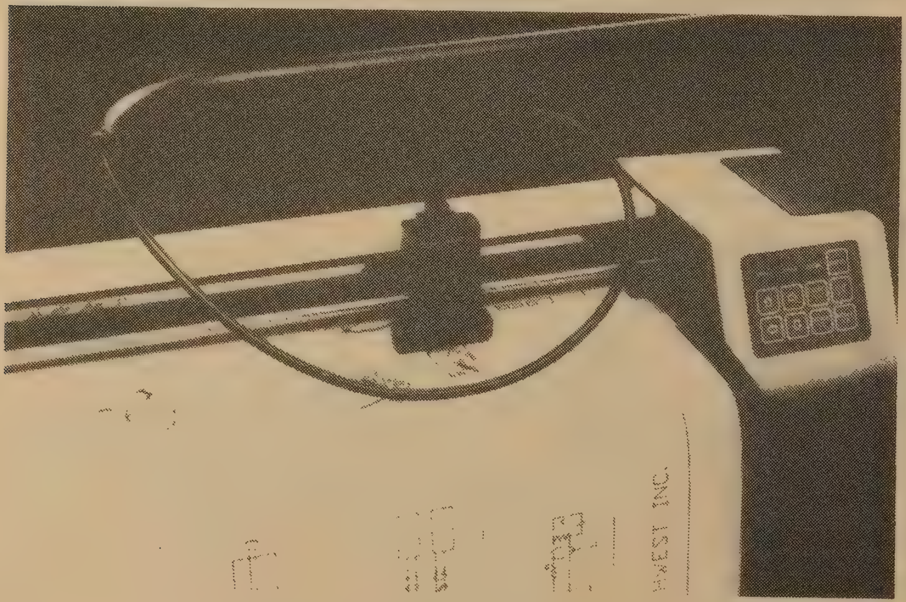


Marvelous Modem

Everex has announced a 2400 baud modem, the EVERCOM-24, which provides Hayes, Bell 212A/103, CCITT V.22 and V.22bis compatibility on a half card size. It is designed to give superior performance on noisy communications lines and includes auto dial, auto answer, auto redial, auto data transfer rate adjustment, and auto data-to-voice switching. It features full or half duplex operating modes, call progress monitoring and off-hook detection to name a few. The EVERCOM-24 is priced at $289. If you need more details, call Vik Vakil at (415) 498-1111 or write Everex Systems Inc., 48431 Milmont Dr., Fremont, CA 94538.

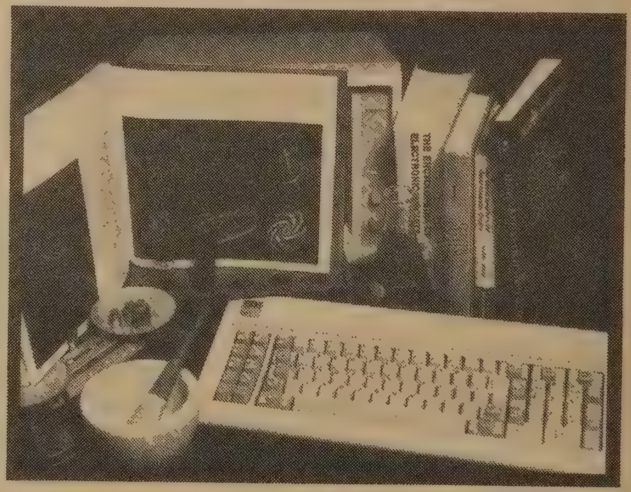
Profit Technology's Breakthrough!

Breakthrough!, from New York-based Profit Technology, is a menu-driven, integrated software package designed for business professionals involved in systematic problem solving, creative thinking and accelerated learning. *Breakthrough!* provides an easy avenue for transforming ideas and suppositions into comprehensive insights and feasible answers. The program consists of several components: Interface and Work, which contains eight text editing modes for tackling multiple projects; Thought Triggering and Amplification, which utilizes an extensive business library and 220,000 synonym thesaurus to facilitate conscious and subconscious thought development; and Breakthrough! Tools and Utilities, which enables users to customize programs, generate reports, as well as create and merge files. In addition, *Breakthrough!* includes a windowing-environment/applications-manager, called ProView, which allows users to run up to 250 programs simultaneously (at twice the speed of IBM's *TopView*). The package is being offered for a limited time at $740 (it's usually $822). It requires 512K RAM and comes with nine floppy disks, a user's guide, reference manual and tool kit. There is also a toll-free customer support number. For information, contact Orest Bedrij Jr., Profit Technology, Inc., (212) 809-3500.



SCAN-CAD Can

SCAN-CAD Accessory Model 128 is a new scanning input device that enables you to convert your Houston DMP-50 Series drafting plotter into an automatic digitizer. Now users have an easy and affordable method to input drawings (up to 36" × 48") into their PC-based computer-aided design and drafting systems. SCAN-CAD features a 200 dpi scan head that detects with accuracy lines as small as .007 inch—this makes it an ideal tool for scanning detailed architectural, engineering or other design application illustrations from paper, vellum, acetate film or blueline. For $2995, SCAN-CAD comes equipped with snap-on scan head, cable and cable support assembly, scanner controller expansion card, scanning software, document carrier and operation manual. It requires an IBM PC or AT with 10MB and 640K as well as a Houston Instrument DMP-50 Series drafting plotter. Houston Instrument, 8500 Cameron Rd., Austin, TX 78753, (512) 835-0900 or (800) 531-5205.



Application Reference For Vertical Markets

One of the largest US publishers of computer specialty books, Abacus, has recently introduced a new volume to add to your bookcase. *Science & Engineering Applications* provides PC users with a wealth of information from such fields as biology, chemistry, mathematics, physics and astronomy. Each subject is covered extensively and includes complete program listings in BASIC. Suggested retail price is $19.95. Abacus will also debut *Statistical Applications On the IBM/PC* shortly. For more information on these or other Abacus products, contact Scott Slaughter or Julie Carle, Abacus Software, PO Box 7219, Grand Rapids, MI 49510, (616) 241-5510.

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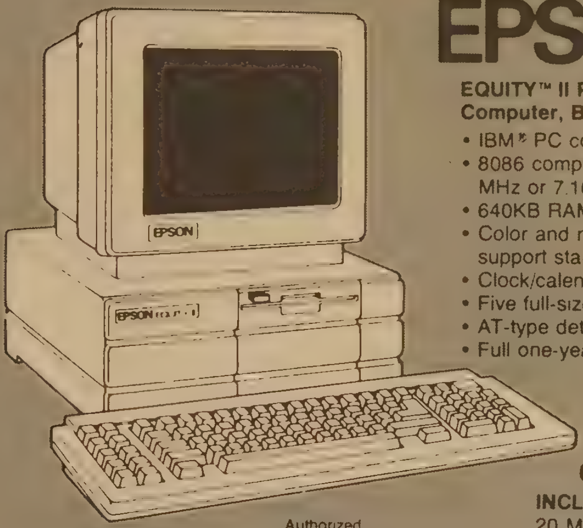

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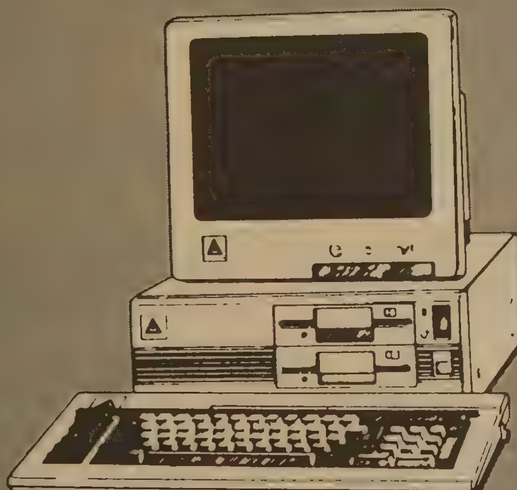

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Reviewed by: *Ira Chandler*

Why did I run out of RAM memory? What can I do to make this memory resident program run without conflicting with this other resident program? Do I have to re-boot every time I run a different application with different resident program needs? How do I unload this "non-unloadable" resident program? Can I deactivate the first of seven resident programs I loaded, a keystroke accelerator, so it doesn't put *WordStar* into cursor run-on out-of-control-mode? What order are my resident programs loaded in, so I know which to unload first?

Two years ago, these questions were rarely asked. Today, they are serious concerns for the majority of PC users. Fortunately, *Referee* offers a simple solution.

Referee is a memory resident program that manages the use of other memory resident programs. A resident program can be deactivated from a simple menu, disabling the key sequence used to call it up. Even better, the effect of the deactivated resident program is cancelled. This is very useful with resident programs which are not called up, but perform some function while they are in memory.

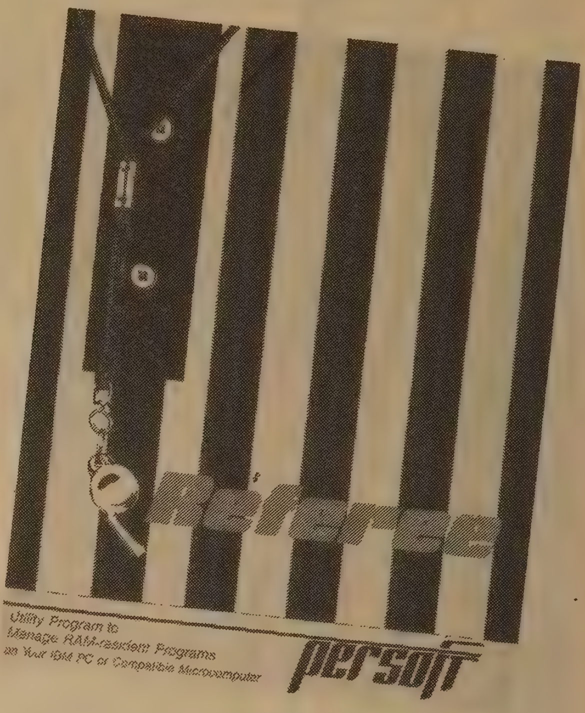
Referee consists of three main programs. *Refwatch*, which requires 25K, is usually called from the **autoexec.bat** file and monitors the resident programs you load after it. *Referee*, loaded from DOS and requiring 64K, is the callable program which displays, activates, deactivates, and unloads your resident programs. The third module, optionally loaded from the **autoexec.bat** file, is *Sideline*, a pop-up manager that performs all the *Referee* functions in a pop-up instant mode.

For the more experienced user, *Referee* has the unique ability to activate or deactivate a chosen set of resident programs according to your needs for the application. When you run your specific application, the designated resident utilities are automatically enabled and disabled. The setup of the file to keep track of these sets is very easy, and well explained in the manual.

I found an immediate use for this with a keyboard speedup routine called QUICKEYS. While most programs and DOS can handle a key repeat rate twice the normal speed, *WordStar* cannot. If I load QUICKEYS, which is unbelievable with the Norton Editor or other fast programs, *WordStar* gets a bad case of cursor run-on. Hit a cursor key, and the cursor flies forever across the screen. *Referee* allows me to deactivate QUICKEYS automatically when I load *WordStar*, which I use primarily for its CorrectStar spelling checker.

Installation is eased by the lack of idiotic copy "protection," a decision for which Persoft should be congratulated and its license agreement followed.

Though the whole program consists of only five files, only two of which must be loaded, no automated batch file loading programs are included. The otherwise excellent manual says that the publisher "assume[s] that you have a basic understanding of simple DOS commands like COPY and DIR." The documention recommends referring to Appendix A for "detailed instructions" on loading *Referee*, and does give the exact commands required for the COPY procedure. While this is adequate for the user who knows what a subdirectory is and how to use it and the path command, I always try to imagine the user as a totally computer-ignorant person who had a genius friend set up his hard disk. If that were the case here, the poor user would be calling in someone for help, and wasting time.


Referee
Utility Program to Manage RAM-resident Programs on Your IBM PC or Compatible Microcomputer
persoft

Referee manages RAM-resident programs to keep them from conflicting with each other.

One feature I greatly appreciate is the **slkeydef** program that allows you to change the "hot" keys that call up *Sideline*. This prevents conflict with other resident programs.

Referee couldn't be easier to use. The commands are simple, as you do not ever type any names or words. The dangerous commands are arcane enough, with the <Alt> key, that you can't accidentally mess up.

Errors are easily avoided by the good design of the program. For instance, to unload a program, you have to unload that program and all of those that were loaded after it, because DOS needs continuous memory, not RAM with holes in it. I attempted to confuse *Referee* by loading, back to back, two programs that use similar hot keys. *SideKick* uses <Ctrl><Alt>, and *NicePrint* uses <Ctrl><Alt><M>. *Referee* had no trouble activating or deactivating either program, and both worked exactly as they should. My compliments to the authors.

The beautifully laid out manual is staple bound, with about 60 clear, concise, well written pages. Especially pleasing is the whole graphic design of the package and manual, done in the classic referee colors of amber and black. Special notes are marked with an amber whistle for emphasis. The screens reproduced are clear, and it's easy to see the point being illustrated. A complete index, and even a postpaid card to submit documentation errors to Persoft, are included. I especially liked the Quick Start Card, detailing, for the experienced user, the few easy steps required to get the program running.

I encountered no compatibility problems, either with the programs themselves, or with their handling of off-the-shelf resident applications—or even some off-the-wall shareware resident programs. If I had not tested this program myself, I would not believe it could handle such a diverse group of resident RAM gobblers.

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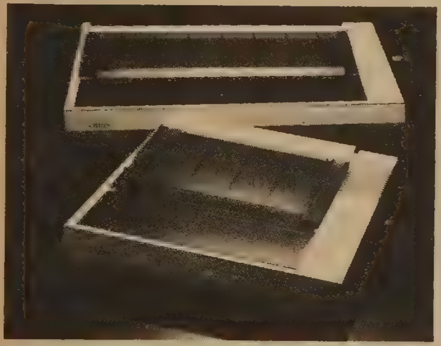

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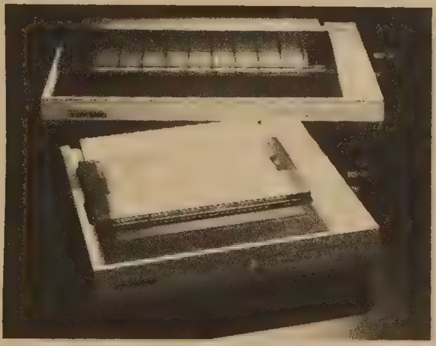

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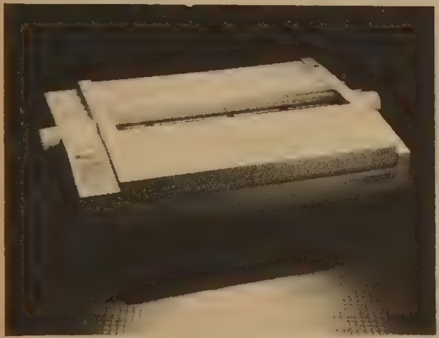

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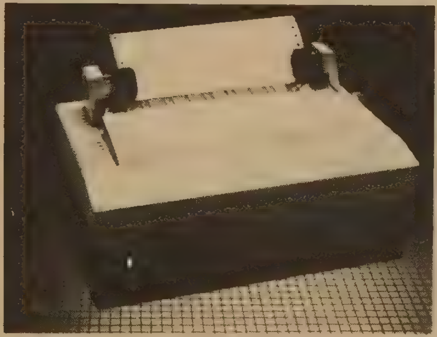

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MICROTIMES CLASSIFIEDS WORK!

For those who design applications for others, or run their machines from batch files, *Referee* can be controlled from the command line. All functions are available this way, and combined with the ability to automatically activate and deactivate resident programs via RAM Teams.

As we so often find, no toll-free support number is provided. This should have little effect in the real world, however, as the manual is excellent, and the program runs exactly as specified.

If you load two or more resident programs each day, get *Referee*! Even if you don't exactly know what you need it for now, it will become indispensable once you use it. (Persoft, Inc., 465 Science Drive, Madison, Wisconsin 53711, 608/273-6000 sales and support 8:30-5:00 CST.)

HARDWARE/PERIPHERALS

Universal Disk Controller

Manufactured by: *Central Point Software*
For: *Apple II Plus, IIe and Laser 128*
List Price: *$150.00*
Reviewed by: *Mike Markowitz*

Central Point Software has a problem promoting its new Universal Disk Controller (UDC) card for Apple II series computers and compatibles. Every Apple user already has a disk controller card, and they don't wear out, so the replacement market is zilch. Generic disk controllers sell for $39, and you can pick one up even cheaper at any computer swap meet. So who would pay $150 for a disk controller?

Anyone who needs a massive amount of storage, that's who. When you consider the growing size of application programs, the 140K single-sided 5¼ inch Apple Disk II represents barely enough memory to hold a grudge.

Apple itself has slowly started to promote the 3.5 inch disk as a new standard for the Apple II family, but the relatively high cost of Apple's own Unidisk (about $350) puts it beyond the reach of many users. No user is eager to juggle two different disk media. For a few more years, at least, Apple II software will mostly be available in 5¼ inch format, despite the superiority of the 3.5 inch disk in capacity, durability and compactness.

The UDC will support two 800K double-sided 3.5 inch drives. That's the equivalent of *eleven* old Disk II drives! That's 1.6 megabytes of storage. The card works with any combination of 5¼ inch, Apple Unidisk, or Macintosh-compatible 400K or 800K drives. Central Point offers a Chinon 800K drive for $195. This drive is noisy and lacks the reassuring little red light-emitting diode that tells you it's working, but it reads and writes *fast* compared with the 5¼ inch devices I am used to.

You can install the UDC in slots 1 through 7 of an Apple II Plus or IIe. Both DOS 3.3 and ProDOS are supported. The II Plus and un-enhanced IIe will not boot from a device plugged into the UDC, but the enhanced IIe and the Laser will, if the card is in slot 7.

The card is supplied with version 7.1 of *Copy II Plus*, which provides utilities for transferring non-protected programs and data files that used to require several disks onto a single 3.5 inch disk. I was unable to copy several copy protected programs onto the 3.5 inch disk from their original 5¼ inch media.

I was able to put all of *AppleWorks* on one 3.5 inch disk and start it up without any disk-swapping. This is a feeling of *power!*

The UDC is assembled in Hong Kong. It is a full-sized board, and all the components are wave-soldered except for an EPROM, which is socketed. The two cables provided with the board have metal-

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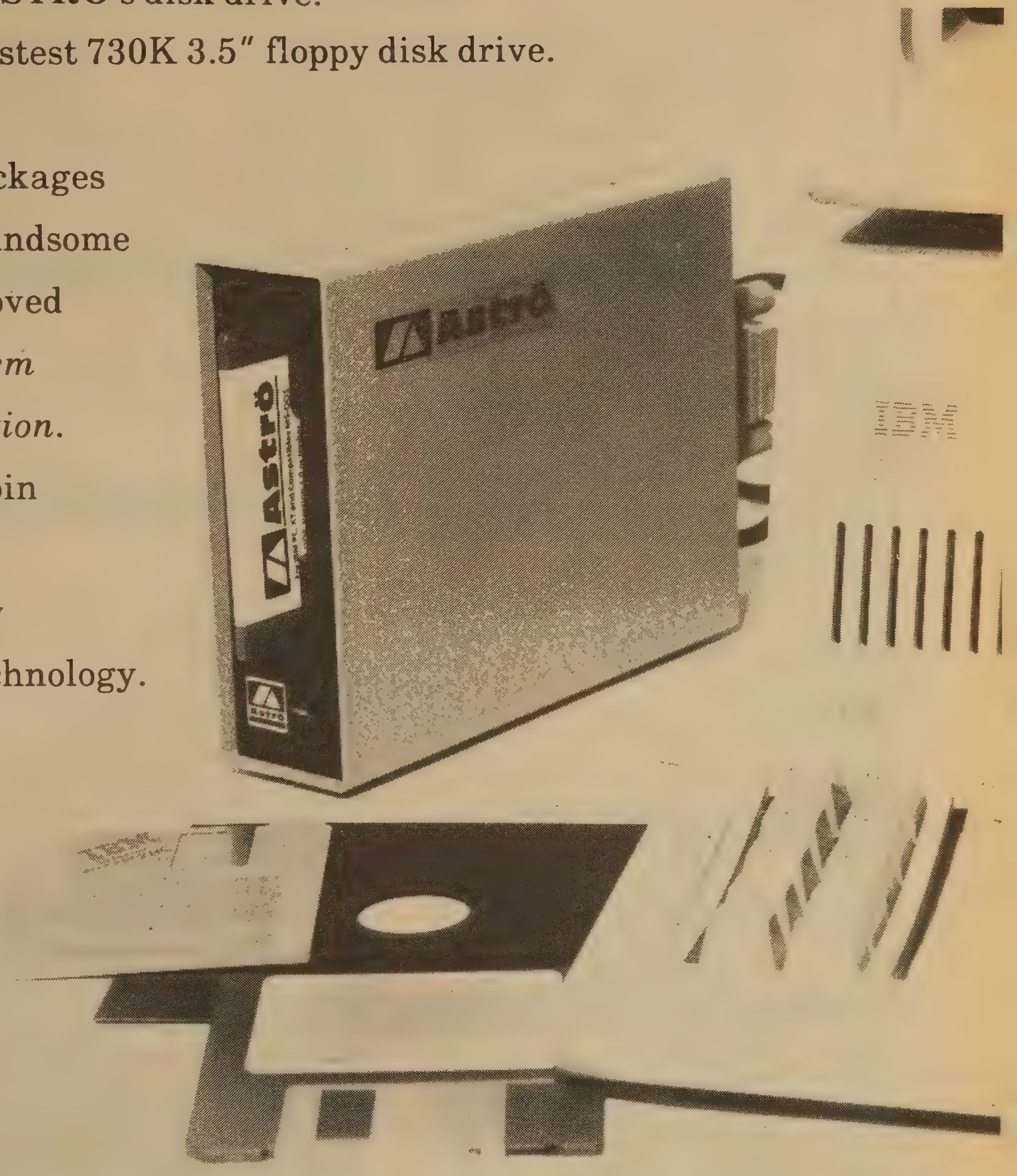

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hooded female DB-19 connectors. To use the controller with an old-style 5¼ inch drive you must cut the wire closest to the red stripe on the ribbon cable. This wire is one of four ground lines, and it isn't needed. Some users may find this intimidating, since it permanently damages an expensive cable.

The Universal Disk Controller is a good value for any Apple user with a need for the 3.5 inch disk. For the next few years, this will probably be a rather specialized minority. With a program selector like *MouseDesk* or *Catalyst*, however, the combination of the UDC and a low-priced 800K drive is almost a poor man's hard disk. (Central Point Software, 9700 SW Capitol Hwy. Suite 100, Portland, OR 97219 (503) 244-5782.)

TELECOMMUNICATIONS

InTouch

Published by: *Palantir Software*
For: *Macintosh*
Price: *$145.00*
Reviewed by: *Mark J. Veljkov, Ph.D.*

After two years, the Mac has finally come of age in the world of telecommunications. There are now at least eight telecommunications programs available, either commercially or in the public domain. So far the serious contenders are *Red Ryder x.x, MicroPhone* and *Smartcom II*, all of which are noteworthy for their macro capabilities. *InTouch*, from Palantir Software, contains many of the same features of these programs, along with some unique capabilities of its own.

InTouch will allow you to connect to any on-line BBS or commercial BBS service (GEnie, CompuServe, etc.). *InTouch* will also allow you to connect Mac-to-Mac and Mac-to-mainframe. *InTouch* can emulate a wide variety of terminals, including IBM 3101, ADDS Viewpoint/60, Beehive DM5A, Televideo 925, VT-100, VT-52, TTY.

While these are not so unusual, *InTouch* is unique in its support of the VIDTEX protocol. VIDTEX is the protocol that CompuServe uses for its graphics applications. This means that you can capture *non-Macintosh* graphics with your Mac. This is a very powerful feature, and once you try it, very addicting (and expensive).

InTouch also includes the standard file transfer protocols including MacBinary and XMODEM; it also supports *Crosstalk*, making *InTouch* the only communications program that allows your Mac to talk to an IBM running *Crosstalk*.

Other features include on-screen function keys, user defined function keys, varied transmission speeds, autodial and auto logon, and the Communications Command Language (CCL).

CCL is the macro language of *InTouch*. CCL will allow you to customize and save your telecommunications settings. CCL is much like the procedural language in *Red Ryder, SmartComm II* and *MicroPhone*. However, from a beginner's standpoint, CCL is *InTouch*'s most difficult feature to use. Once mastered, it is very powerful. You can automate virtually everything you would ever want to while online. CCL does contain one very nice additional feature not found on some of the other programs that have a macro language—an "execute" function. Execute allows you to test out your macro before you actually run it, which can save you time and money. While CCL is more difficult to learn and use than the Watch Me feature found in *MicroPhone*, once you've learned it, your online time should be an easy and painless process.

The Auto Receive function is also a very handy feature. With Auto Receive, you can create a macro with CCL, and set your Mac up to automatically

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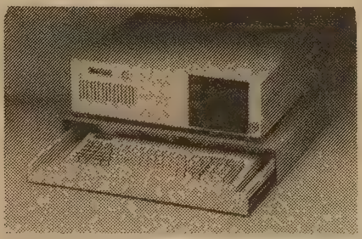

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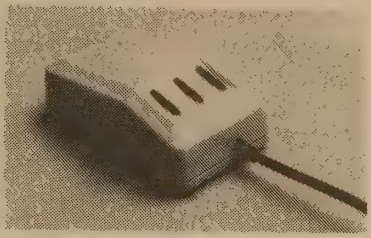

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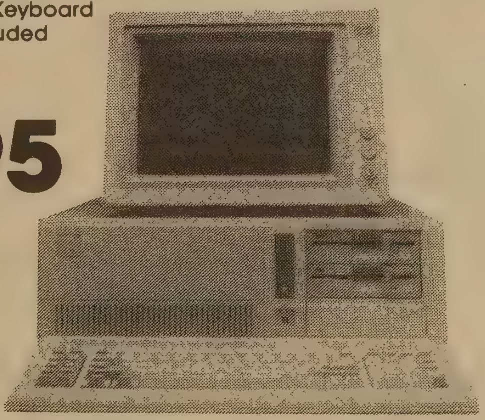

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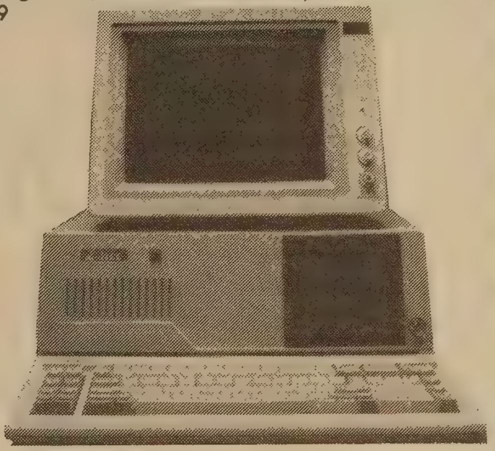

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10527 Humbolt Street, Los Alamitos, CA 90720 dial a specific number at a set time. Once online, your Mac will then log on to your service, go to the appropriate location, down- or upload whatever files you have specified (or get your electronic mail), and finally log off. All of this can be done at any previously specified time. You don't even have to be at home!

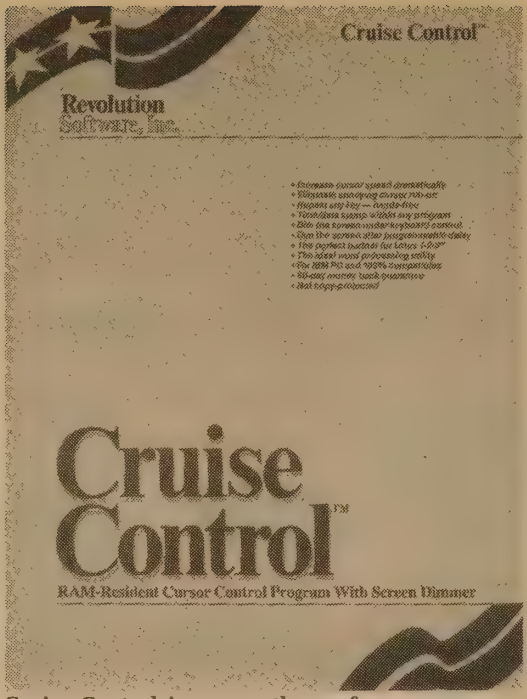
The manual is well written and clear. It could contain a better tutorial of the CCL. It relies too much upon the pre-set scripts on your disk; to obtain the full power of CCL takes some mastering. Other than this, the manual has a good index and is organized well.

To a certain extent, all telecommunications programs perform similar functions, and it's the particular features that distinguish them. *InTouch* will get you connected to your basic services, even while you are asleep. But where *InTouch* really shines is in the number of protocols available for you to use. VIDTEX is, and will be, very useful. Also, in this year of "networking," the capability to communicate with *Crosstalk* on the IBM could become a major selling point. (Palantir Software, 12777 Jones Rd., Ste. 100, Houston TX 77070, 800/368-3797.)

UTILITIES

Cruise Control

Published by: *Revolution Software, Inc.*
For: *IBM PC/XT/AT or compatible; PC/MS-DOS 2.0 or higher.*
Price: *$29.95*
Reviewed by: *Jim Switzer*


Cruise Control™
Revolution Software, Inc.
Cruise Control™
RAM-Resident Cursor Control Program With Screen Dimmer

Cruise Control improves the performance of cursor keys on IBM keyboards.

How many times have you sat patiently at your keyboard holding down a key that you wanted repeated many times? Or released your cursor key at the "K" cell of your spreadsheet only to have it stop at the "X" cell? Well, these and other cursor movement problems are over. *Cruise Control*, from Revolution Software, puts you in control of your cursor once and for all.

Cruise Control is a RAM-Resident utility that offers you a lot of interesting features never before offered in a software product. For instance, an infinite repeat feature on any "repeatable" key, adjustable cursor speed control, elimination of the dreaded cursor "run on," a timed or manual screen dimmer, and the ability to add a date/time stamp within any program. All of this power uses less than 5K of your computer's memory.

Cruise Control is not copy-protected and comes with a very nice installation procedure. This procedure can be used to install the utility onto a hard disk or floppy and modify your AUTOEXEC.BAT file at the same time. To start the installation program, place the distribution disk into Drive A, type A:INSTALL, and press RETURN. The installation process will display a full screen with prompt areas for you to fill in with your settings for *Cruise Control*. After you have completed modifications of the settings, the program asks you whether you wish *Cruise Control* to be added to your AUTOEXEC.BAT file. If you reply yes, the program will read and display the contents of the file and allow you to place the *Cruise Control* execution statement at any point within this file. All this sounds and looks very impressive, until you restart your computer and find that the statement will not execute *Cruise Control* unless you have had the installation procedure place the program in the Root directory of your hard disk. If you haven't, you either have to move the CRUISE.COM file to the root directory and modify your AUTOEXEC.BAT file or modify your PATH statement to point to the directory that contains the program.

Once you've dealt with this, *Cruise Control* functions very well. It improves performance of all cursor-movement-intensive packages. It also tremendously enhances programs that support a mouse. An example of this would be the GEM series of programs from Digital Research. I don't happen to have a mouse, so movement of the pointer is a rather slow task. But with *Cruise Control*, the pointer zips across the screen almost as fast as it would if I had a mouse. *Cruise Control* improves mobility within spreadsheets, word processors, and database programs to an amazing

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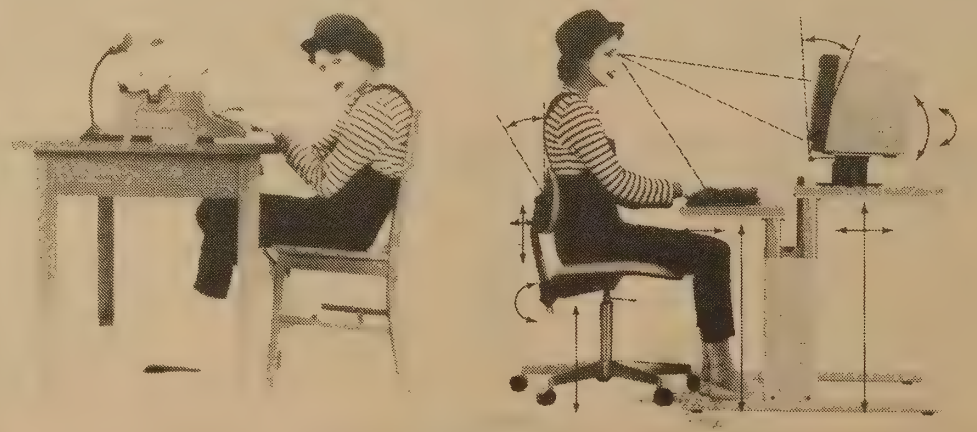

Although the term is relatively new, the concept has existed almost forever.

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degree. The date and time stamps are extremely useful in word processing programs that don't offer this option. *Cruise Control's* screen dimmer is very nice if you happen to be like me and leave your computer running for extended periods of time unattended. The Auto screen dimmer will "blank out" your screen after a pre-designated period of time of no keyboard activity. The screen can be restored simply by pressing any key on the keyboard.

One drawback of having *Cruise Control* operating all the time appears with programs that disable the DOS keyboard buffer. Programs like *SmartCom II* use this feature, which basically puts *Cruise Control* out of business. The problem doesn't manifest itself unless you exceed the time limit on the Auto screen dimmer. If you are in the middle of telecommunications at the time this happens, your screen goes blank and there is no way of restoring it short of exiting *SmartCom.*

Cruise Control is very easy to use. The program is executed by typing CRUISE and pressing RETURN. This will load the program into memory with the standard default settings. If you need any help with the settings you can type CRUISE/H and press RETURN. This will display a list of the modifiable settings with a little explanation of each. Once the program has been loaded, the "HOT" key is the "5" key on the numeric keypad with NumLock off. To speed the cursor up, press the "5" and "+" keys on the numeric keypad at the same time. You will hear "clicks" that tell you that the program is speeding up the cursor. When the clicks stop, or you think that the cursor will be fast enough, release the two keys. If, in fact, the cursor moves too fast, you may slow it down by pressing the "5" and "–" keys simultaneously to slow the cursor down. Pressing the "5" and DEL keys will blank out the screen, with any other key restoring it to its original state. You may change "control strategies" by pressing the "5" and the Tab key.

The control strategies are either "A", "B", "C", or "D" when loading *Cruise Control* (the standard default is "A"). These are used for identification of the different groups of software that the program supports. You may find that strategy "A" works well with *Lotus 1-2-3*, but not with *Crosstalk XVI.* Looking up on the provided list of software/strategy combinations, you find that *Crosstalk* requires strategy "B". Rather than have to re-execute *Cruise Control*, you may change strategy by using the above procedure.

The current system date may be inserted in any program by pressing "5" and "D", and the time by pressing "5" and "T". *Cruise Control* can also repeat any key indefinitely by pressing and releasing the "5" key, followed by the key that is to be repeated. The repetition may be stopped at any time by pressing any other key on the keyboard. Every one of the program's features is easy to use and very helpful.

The documentation for *Cruise Control* consists of a 22-page booklet detailing the hows and whys of using the program. It also contains a very nice explanation of why the program was designed and the conflict within your computer that it resolves. Also included is a list of major software products and the Control Strategy that each requires.

Cruise Control is said to run on the IBM PC family of computers and compatibles. The program was tested on an IBM PC/XT with 640K. If you don't know whether it will run on your equipment, contact Revolution Software.

Revolution Software offers a 60-day, money-back guarantee on the purchase of *Cruise Control.* If you are not satisfied, simply return the program and documentation for a refund.

Cruise Control is one of those packages you'd probably overlook at first and not even try. Well, I'm here to say that it is definitely worth the $29.95 price tag. But don't take my word for it. Try it yourself. With a money-back guarantee, how can you go wrong?(Revolution Software, 715 Route 10 East, Randolph, NJ 07869, 216/366-4445.)

OTHER REVIEWS

Concurrent DOS

Version 5.0

Published by: *Digital Research*
For: *IBM PC/XT/AT, minimum 640K RAM*
Price: *$395*
Reviewed by: *Jonathan E. Martin*

This is what MS-DOS should have been in the first place. *Concurrent DOS* makes me feel like the IBM's turned into a *real* computer! This replacement for MS-DOS from Digital Research is well worth the price—just imagine being able to run (simultaneously!) three printers and a terminal off your PC without having to swap cables, reconfigure ports, or deal with other similarly loathsome tasks. *Concurrent DOS* also lets your computer work as a multi-user, multi-tasking machine with no further major investment in hardware, which is a great boon to the user.

If you have an EEMS board, such as the ones produced by Quadram and AST Research, four applications can be run at one time using *Concurrent DOS.* Of course, the machine is correspondingly slower, but it's great to be able to produce a graph from a *Lotus* spreadsheet while producing a report with *Word* and running two separate copies of *dBASE III* for reference data. Or how about running two separate copies of *Supercalc3,*

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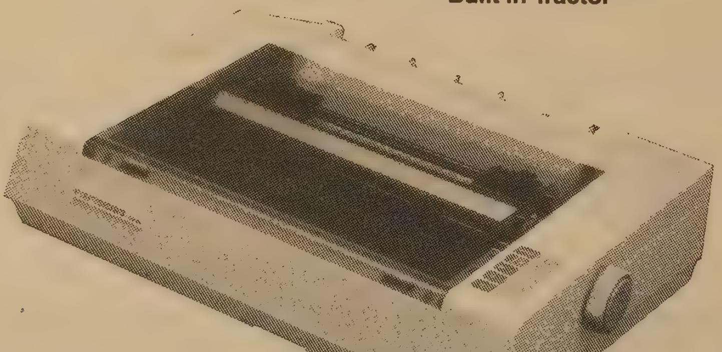

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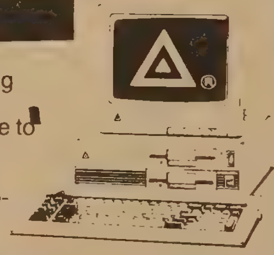

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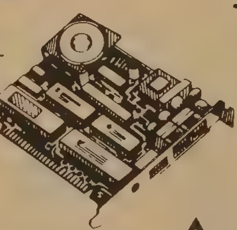

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each solving a different problem?

While the slower speed of the system is a drawback, *Concurrent DOS* provides considerable time savings in actual working situations. Imagine how much more quickly you'd work if you didn't have to exit an application to start another to get data for the first, then start up the first, and so on. In testing applications, I found that while the system was slower, my throughput was much faster.

Instead of forcing you to learn all of the DOS commands, *Concurrent DOS* has a program called "FILE MANAGER" which lists on a side bar all of the important commands, the files in the directory, and—a great feature—the amount of space remaining on the disk.

For beginners, or for those that do not use all the facilities all the time, there is a fantastic HELP facility. At any point the user can call up the HELP topics and learn command formats without having to dig out the manual. The user has the option of using the *Concurrent DOS* menu system, which is very well laid out, or the standard command line, as with MS-DOS. Users are able to set up their own menu system, thereby saving time and becoming more organized when using the menu structures.

Concurrent DOS also includes a good text editor that can handle most non-professional word processing needs, and a rolodex emulator called Cardfile. Cards can be updated, deleted, searched, and printed. Being from Digital Research, *Concurrent DOS* also runs CP/M-86.

Being able to run multiple programs is just a start. There are so many nice features in *Concurrent DOS* that just listing them would take up more space than is available. The names of the disks being accessed are flashed on the bottom of the screen—much better feedback than you'd get just looking for the disk lights on the machine. The screen updates are much faster than the slow scrolling of directories in standard MS-DOS. Also, when you're formatting a disk, *Concurrent DOS* keeps you continually informed of the progress of the process—more helpful than the standard MS-DOS "formatting" line. When you use the File Manager, the amount of space remaining on the disk is displayed in the upper left-hand corner.

Installation of *Concurrent DOS* is very easy. When you're booting from the master disk, the startup screen asks if the program is to be installed. After you tell the system which drive to install *Concurrent DOS* on, everything is automatic; the only interaction is a matter of changing the disk that files are being copied from. When booting from the hard drive thereafter, you'll be asked whether or not to load *Concurrent DOS*. If you say no, the system loads the standard (and now mundane) MS-DOS.

To give you an example of what can be done without any hardware other than the ports and a terminal: I have three printers hooked up to my system, a letter quality, a dot matrix, and an inkjet. Jaws dropped when I had a report being typed out on the daisywheel, a program listing on the dot matrix, and a graph of *Lotus* data for the report coming out on the inkjet—all this while displaying for reference a routine I wrote in C on a standard terminal while I wrote another program on the main IBM screen. Meanwhile yet another program was compiling in the background.

Concurrent DOS is very friendly for the first-time or casual user, and offers power MS-DOS can't even begin to touch. I had only one problem with the software—the first set of disks did not run. After a call to Digital Research, the new set of disks arrived two and a half weeks later; these disks worked well the first time out.

My recommendation? RUN, don't walk, to your nearest dealer and order a copy. (Digital Research, P.O. Box 579, Pacific Grove, CA 93950.)

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Aströ EXT1

External 3.5″ disk drive for IBM-PC, IBM PC-XT

By: *Aströ Systems*
Price: *$395 limited-time introductory price; ce;*
$495 regular price
Reviewed by: *Bennett Falk*

The Aströ EXT1 is a handy gadget for owners of the IBM PC or IBM PC-XT. An external 3.5″ diskette drive, the EXT-1 can be attached to the 37-pin adapter on the PC's and XT's standard floppy disk controller. The EXT1 package includes the disk drive itself, a 3.5″ diskette, a power supply, an adapter cable to connect to the PC, the necessary device driver and diskette management software, and an attache-style carrying case. Attaching the EXT1 to a PC-DOS machine that does not have the external disk adapter already in place would require the installation of such a device, which is not included with the EXT1.

The EXT1 enables IBM users to read, write, and format 3.5″ PC-DOS diskettes. These diskettes have a 720 kilobyte capacity, twice that of the standard double-sided, double density 5.25″ floppy diskette.

Using EXT1 to add a 3.5″ drive to a PC system has several advantages. Most immediately, it provides a medium for both regular disk storage and hard disk backups that's less cumbersome than standard floppy disks and more economical than either tape sub-systems or high density floppy disk controller systems. In addition, the EXT1 provides a handy way to move data between DOS-based "laptop" computers configured with the 3.5″ drives and their desktop cousins which have traditionally relied on the 5.25″ floppy disk.

Installing the drive is simply a matter of connecting the included cable to both the drive and the 37-pin connector on the PC, attaching the power supply, installing a device driver in your standard "CONFIG.SYS" file, and rebooting the computer. Of course you will also need to copy the disk formatting software to your working diskette.

Once in place, the drive is addressed from DOS as drive D:, and can be used in the same manner as any other disk drive on the system. The 3.5″ disks are perfectly standard DOS diskettes, and can be examined with products like the Norton Utilities. Be aware that the EXT1 is strictly a tool for DOS machines. You will not be able to read 3.5″ diskettes prepared using, say, a Radio Shack Model 100.

In use, the drive tends to be a bit slower than either floppy disk drives or hard disks. Loading and executing a small program from the external drive took nearly four seconds, compared with two and a fraction seconds for loading from a floppy drive and slightly less than two seconds from a hard disk.

Users may have to think a bit about how best to use the EXT1. With the drive's extra capacity, it is easy to reach the limit of DOS directory entries well before the available storage space is used up. Careful use of subdirectories will avoid this problem.

Documentation accompanying the EXT1 is sparse, and it would be good to have more technical information included with the product, particularly some suggestions concerning external disk drive adapters for those who wish to use the EXT1 with IBM clones. (Aströ Systems, 807 Aldo Ave., #106, Santa Clara, CA 95054, 408/922-5599)

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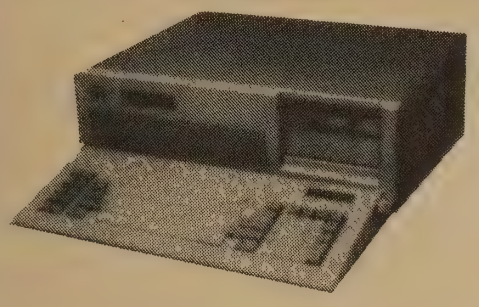

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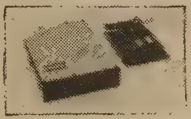

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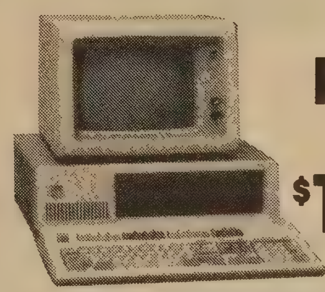

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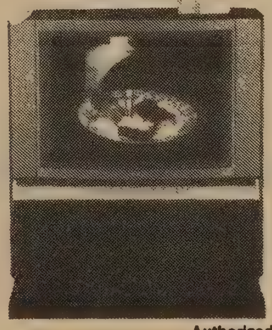

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Copy II PC

Release 3.00

Published by: *Central Point Software*
For: *IBM PC/XT/AT jr, 64K RAM minimum*
Price: *$39.95*
Reviewed by: *Jonathan E. Martin*

Picture this: you are getting ready to make a presentation tomorrow and are using *Lotus* to prepare your arguments for seed money. The computer hiccups and the master *Lotus* disk is forever gone. It will take days (in one personal case, weeks) to get a replacement. You are shut down until that disk arrives. The solution? Make a copy of the master or installable disk. The problem? The disk is copy protected. The new solution? Order a copy of *Copy II PC*. I have just received the latest release of *Copy II PC*. To be perfectly honest, I was going to order the update the same day the review copy arrived. *Copy II PC* is one of the programs that I cannot live without.

Copy II PC allows the user to back up most copy protected disks. As a software developer, I want the revenues from my work. The options are to copy protect the disk so that only the master disk works, or to provide such useful documentation (and reasonable price) that the users won't mind spending the money for the package.

Too often the "solution" is to use copy protection. All objections to copy protection can be boiled down to three reasons: having to use a key disk (inconvenient), replacement time if something goes wrong (a lot of lost time), and the fact that sometimes the copy protection does not allow the program to be installed.

Using *Copy II PC* is very easy. Since the program itself is not copy protected, it can be run from a hard disk as well as a floppy. The startup screen uses the reminder that the program is to be used for legal (i.e. *no pirating*) reasons. All you need to do is follow the prompts. In a one-floppy, 640K system, the first disk is read in its entirety, and then an unformatted blank disk is put in to receive the data. When using a small memory size and just one floppy, be prepared to wear out your wrists swapping disks. I have gotten into the habit of using the *Copy II PC* program for simple disk copies because the program indicates what track and side is being read and copied. I also know that copy is exact and do not have to worry about a dropped bit with the standard IBM COPY command.

Some programs require the use of two utility programs, NOKEY and NOGUARD. A list of the most popular IBM programs is provided and instructions on which, if any, utility programs should be run in addition to *Copy II PC*.

The people at Central Point Software must be commended for having the nicest people on the telephone. I have called in several times for information on updates and for help a couple of times. In all cases, the answers were prompt, the people on the telephone were very nice and polite, and I left with a feeling that Central Point is a rare company these days: one that puts the customer first.

If you count on a program being available at all times, you cannot afford to lose time waiting for a replacement, or are just as paranoid as I am and keep a total of three copies of all programs under two separate roofs, *Copy II PC* is a necessity. The knowledge of having an immediate backup disk in case of disaster is worth the low cost of the program. Updates to *Copy II PC* have been reasonably priced in the past, and I'm sure will continue to be so in the future. (Central Point Software, 9700 SW Capitol Hwy./#100, Portland, OR 97219, 503/244-5782.)

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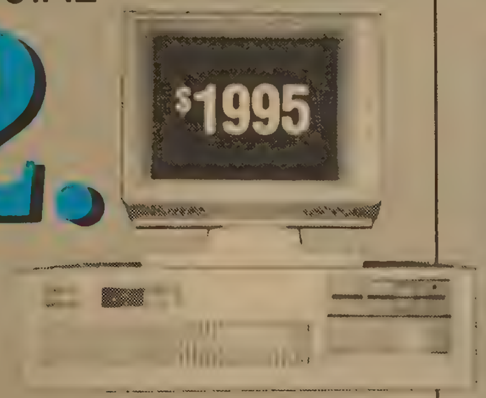

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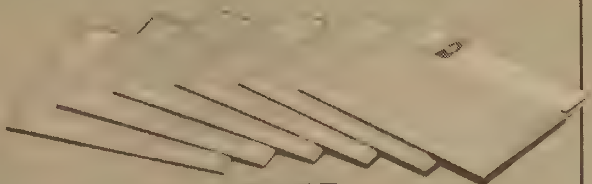

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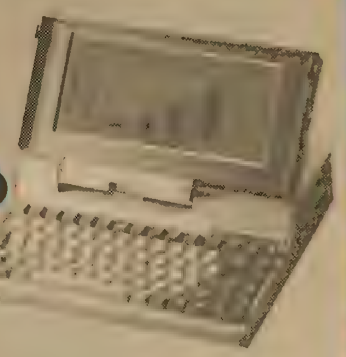

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COMPUTOWN

USER GROUP NETWORK

By Mary Eisenhart

And a happy new year to you, too.

This month's mail brings more listings, announcements, and changes, along with a few Cries For Help. We'll start with those.

Bob Margulies of Manhattan Beach writes "I am a happy owner of a **Compaq Deskpro,** and would like to be put in touch with one or more user groups in order to get some information about the goings on inside my machine. The manufacturer has been amazingly reticent on the subject of hardware and software." Bob has obviously read this column before. He ends his letter with "No, I have no intention of starting a group myself."

And so, dear readers, if any of you know of any Southern California Compaq groups, Tell All Here, or drop Bob a line at 507 S. Aviation Blvd., Manhattan Beach, CA 90266. Meanwhile, Bob, you might want to call (415) 221-2764; this phone number belongs to one **D. Blow**, who can give you information about the **Compaq SIG** of the **San Francisco IBM PC Users Group**, which is at this point the only Compaq group I know about.

K. Stephan Larsen, all the way from Englewood, Colorado, isn't exactly looking for a user group, he's looking for information—but after all, one of you folks might know the answer, and I'm a shameless buck-passer, right? Anyway, says K. Stephan, "We are trying to locate a company (or its successor) called **Mirage Concepts**. They used to publish a word processor titled '**Express**,' and were based out of Fresno, we are told. If you or any of your readers can put us in touch with them we would surely appreciate it.

"Failing that, we are in need of a rudimentary word processor (IBM) that we may incorporate into an application we've developed. Again, if you or any of your readers..."

Any readers with info about the elusive Mirage Concepts and Express, or suggestions for alternatives, are encouraged to contact K. Stephan Larsen at Larsen Cotton Inc., 7445 East Peakview Ave., Englewood, CO 80111, (303) 220-9050.

Brian Smith of Redondo Beach is looking for people interested in the relational database **Paradox**. He's with the **Southern California Paradox Users Group**, aka LAPALS, and reports that meetings are being held in LA and Orange Counties. If you'd like to know more, send him an SASE at 350 Palos Verdes Blvd., Redondo Beach, CA 90277.

On the other hand, the stargazers among us might want to know about a valuable resource from the **Astronomical Society of the Pacific**. The Society has put together a new annotated listing of astronomical software that's currently available for home computers. The list includes 89 different commercial programs for Apple, Mac, IBM, Commodore, Atari, TRS-80 and Hewlett-Packard micros, among others. Each listing includes a brief description of the software, the computers for which it's available, the retail price and the full address of the manufacturer. The list also includes brief reviews of 13 introductory books and articles on astronomical computing.

You can get your very own copy of this 8-page book by sending a donation of $2 to the Society, along with your name and address (add $1 in US funds for postage if you're ordering from outside the US). The Society's address is A.S.P., Computer List Dept., 1290 24th Ave., San Francisco, CA 94122. Or if you'd like to know more, call Andrew Fraknoi at (415) 661-8660.

Lots of events this month. **The Silicon Valley Computer Society** will hold its January general meeting at 7:30 pm on January 28 at the Oak Room at Hewlett-Packard, 19447 Pruneridge, Cupertino, Building 48. This month's featured speaker is **George Morrow**, a veteran of the microcomputer industry and a man of strong and sometimes controversial views. He'll be speaking on the changing technology of personal computers and the impact of government restrictions on the free enterprise system from which the personal computer industry grew. If you'd like more information, call **Bert Stephens** at (408) 730-2240.

The **APL Bay Area Users' Group** will feature a talk by **Larry Breed** at its January meeting, says our faithful correspondent **Curtis Jones**. This talk, says Curtis, should be interesting to "anyone who's followed the development of APL. APL began as 'Iverson notation'—a means of writing algorithms clearly and concisely on paper. Larry came to Stanford in the mid-'60s and started writing interpreters that allowed computers to run the algorithms written in Iverson notation. Twenty years later Larry has some ideas about what was done right and what might have been done differently." The meeting will take place on the evening of January 19 at I.P. Sharp Associates, 220 California Ave. in Palo Alto. For more info call Curtis at (408)292-4060.

The **San Francisco Apple Core** will be hosting four seminars on Saturday, January 17, two for Apple II users and two for Macintosh. The Apple II sessions will be "Educational Programs for Children K to 3" at 10 am, with hands-on demos of approximately 20 children's programs, and "Assembly Language Programming on the Apple II" at 2 pm, led by **Leon Venter**, tech support for **Blythe Software**. Mac sessions are "Desk Accessories" at 10 am, and "Excel Developers Seminar" at 2 pm. The Apple sessions will be held at Winners Circle, 2618 Telegraph Ave., Berkeley; the Mac sessions will take place at Word Processing Services of San Francisco, 2354 Market (near Castro) in San Francisco. Cost is $10 per person for each session; children will be admitted free of charge and teachers at half price to the educational software seminar. For more information call (415) 771-5830.

Ruth Stever of **MacValley**, the Macintosh user group of the San Fernando Valley, informs us that the club's January meeting will feature a presentation from a representative of **Orange Micro**, showing its new pagemaking program **Ragtime**. The meeting is scheduled for Tuesday, January 20 at 7:30 pm in the cafeteria of Burbank High School, Burbank Blvd. at Third St. in Burbank. Call Ruth at (818) 848-1277 for info.

The Computer Interest Group of the **California Genealogical Society** will be meeting on January 10 at 11:30 am at the CGS Library, 300 Brannan St., 4th floor, San Francisco. **Hugh Barnett** from **Roots Unlimited** will demonstrate his computer genealogy system, handouts and information will be available and a roundtable discussion will follow the presentation. **Wayne Shepard**, who passes this information along to us, adds that the regular meeting will follow immediately after the presentation and recommends bringing your own lunch. For more information on this and other matters genealogical, give Wayne a call at (415) 989-5441.

Changes in group-land: **Merle Zmak** reports that the **Diablo Valley Apple Users** have moved to a new meeting location. You'll now find them at the Willow Creek Center at 1026 Mohr Lane in Concord, at 7 pm on the first and third Fridays of the month. If you'd like directions or just want to know more, give Merle a call at (415) 672-7596.

Don Henderson of the **Orange County Victor Group** has similar news—the group has thought better of its former policy of meeting on Saturday mornings and also moved to a new location. Meetings are now being held on the second Friday of the month at 7:30 pm at Cal State Long Beach, in Room 304 of Engineering Building #2 on Palo Verde Street. This is Cal State LB's computer lab, which, says Don, "now has over 40 Victor 9000 computers plus several IBM clones." Don invites calls at (714) 894-0073.

Paul Foraker sends us e-mail on The WELL to inform us that **MaCruzers**, the Macintosh group of Santa Cruz, also has a new meeting location—the Louden Nelson Recreation Center in Santa Cruz. Meetings are at 7 pm on the second Wednesday of the month. Paul adds that the club now has its BBS up and running. **Wood Ring**—(408) 423-7205—operates about 18 hours a day and offers several megabytes of public domain and shareware downloads, and Sysop Paul says he's making every effort to have the latest versions of important desk accessories and utilities available to callers.

Allen B. Ashley of Garden Grove writes in to tell us that the erstwhile **Xerox Users Group** has changed identities somewhat. Originally formed to support users of the Xerox 820 and 820II CP/M-based machines, the group found its members migrating to the DOS world without much of a supporting software library. "They have found ways to retrieve their pet CP/M files, and many have found that the old equipment is adequate for the jobs it was designed for," says Allen. "The new equipment gives greater flexibility and speed to their new ideas." The newly-christened **Pro*BUG (Professional Business Users Group)** meets on the first Saturday of the month at 9 am at Mercury Savings and Loan, 1095 Irvine Blvd., Tustin. It supports all PC/MS-DOS and CP/M machines and has its own BBS at (714) 543-3197, which runs 24 hours a day at 300 baud and supports XModem protocol. For more info, contact Allen at (714) 537-4608.

Speaking of BBSs, **Jim Switz** reports that his **01 MEBBS** board will be down for about a month while he moves. Watch these listings for the new number. **Robert Parks** would like you to know about his **Track 3 BBS**, which, he says, is an Apple board "modified to look like FIDO"; "it is aimed at anybody with an interest in things that travel along rails," from trains to roller coasters. Check it out at (415) 540-7570, 300/1200, 24 hours. **Bill Bennett** has moved the **Cat's Tail BBS** to a spiffy new Apple IIGS and re-christened it the **Cat's Tail Mega-System**. You can check out its impressive array of message boards and file transfers at (415)349-TAIL, 24 hours a day.

That's about it for now. Stay in touch—send Snail Mail to 5951 Canning St., Oakland, CA 94609, and e-mail to <microx> on The WELL (415) 332-6106. ☐

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The Spotlight BBS. (209) 368-5591. 300 baud, 24 hours, 8-N-1, dual drive Commodore 64 operated. Sysop: The Spot.

213

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Marina Matchup (213) 397-6300. This Mar Vista-based dating board operates with Martian software.

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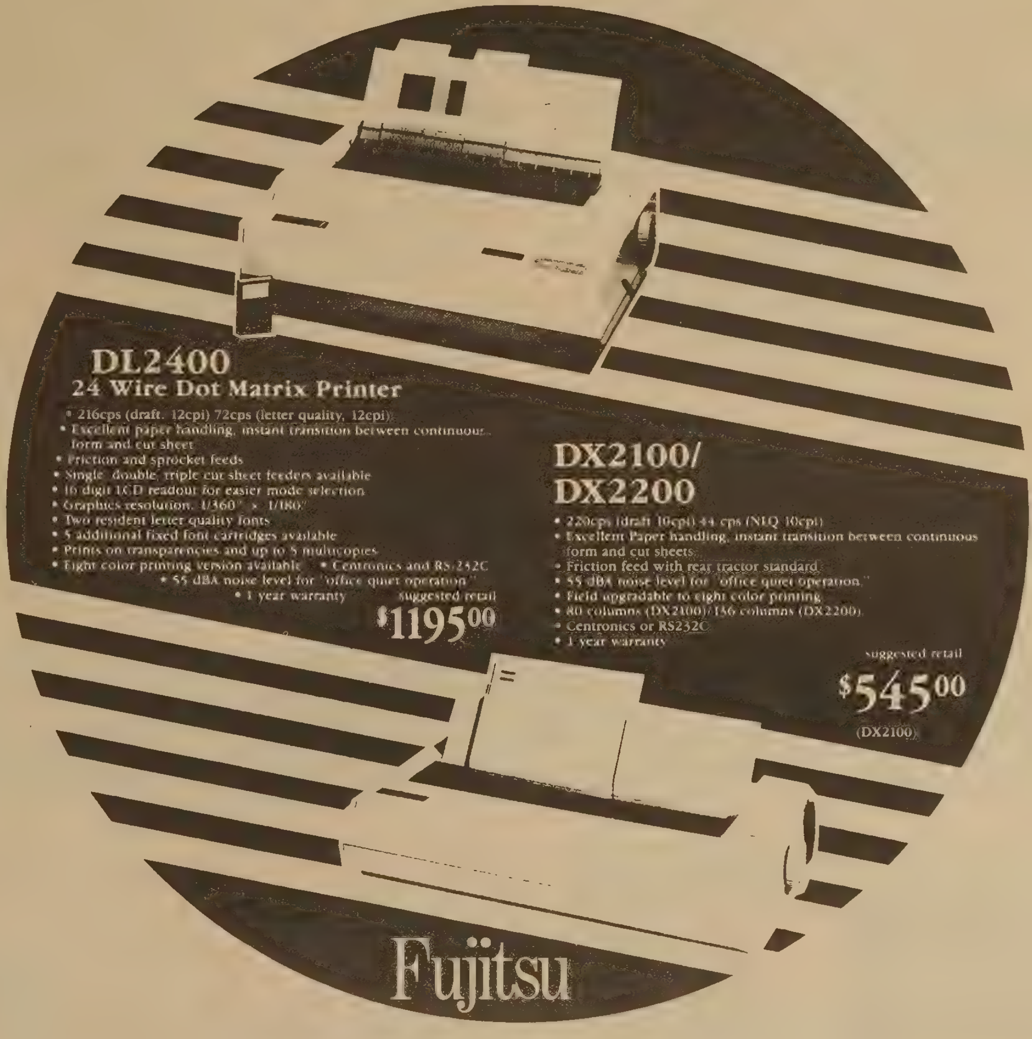

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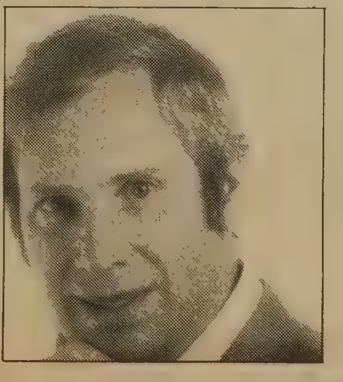

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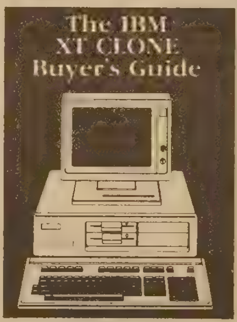
Marin Community BBS (415) 459-3326. 300/1200 baud, 6 pm - 10 am M-S, all day Sunday. 520 ST/Atari information. Sysop Dave Powers.

MacCircles EBBS (415) 484-4412. 24 hours, 300/1200/2400. Running Red Ryder Host software on a Lisa 2/10 (Mac XL). Large software exchange, private mail system, public messaging.

Musician's Network BBS. Musician's information exchange. Space for want ads, bulletins, and public mail. Uploading and downloading available. BBS operates on Fido Software. 8 bits, no parity, 1 stop. Weekends only, 6pm Fri-6am Mon. (415) 893-1618. Sysop: Erik E. Hayles.

520 ST Atari BBS (415) 783-5545, 24 hours, 7 days a week. 300/1200, 8 data bits, 1 stop bit, no parity. Official Sixteen Bit Atari BBS of the San Leandro Computer Club, this system offers full support for all Atari ST system users. Currently running on a ten megabyte hard disk system, the system has many special interest areas including graphics, C, Pascal, LOGO, Basic, MIDI / music, communications and more. Supports four types of XModem/Modem7 and Kermit



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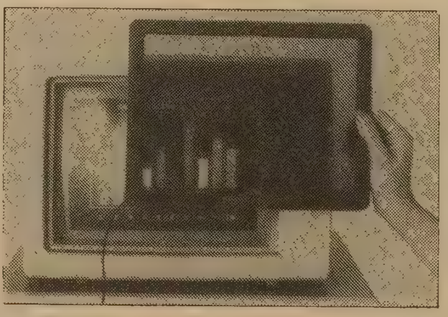

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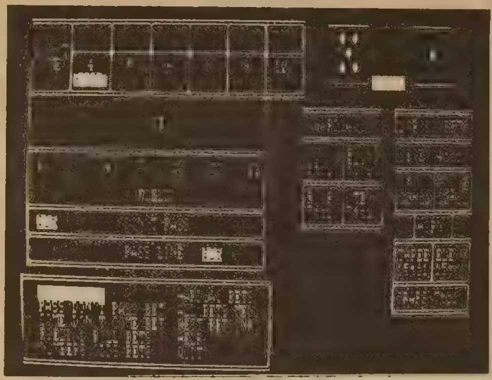

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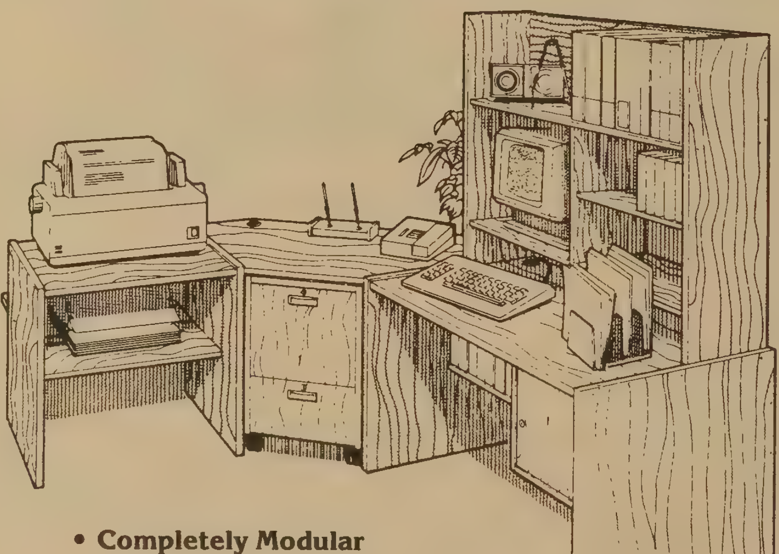

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717

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805

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CCCUG BBS. Central Coast Commodore Users Group. (805) 934-2216. 24 hrs/7 days, 300 baud, Punter BBS protocol for downloads. Sysop: Greg Johnson.

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818

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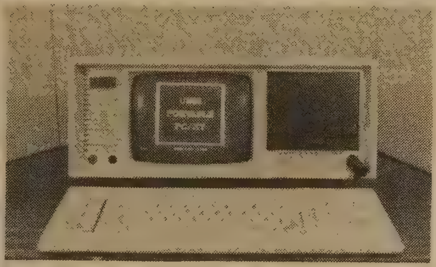

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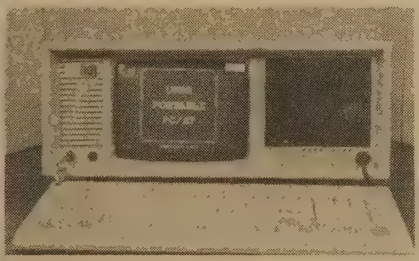

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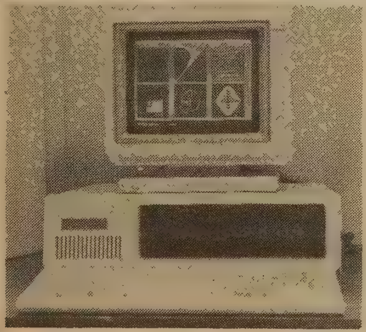

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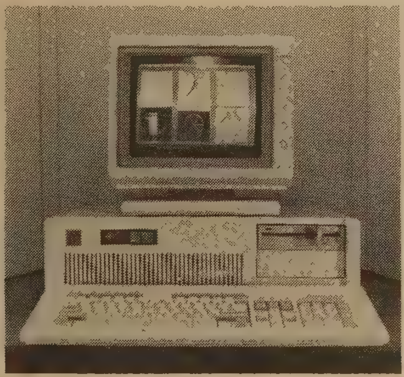

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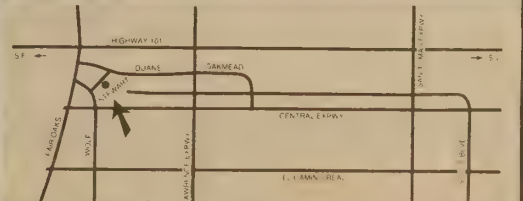

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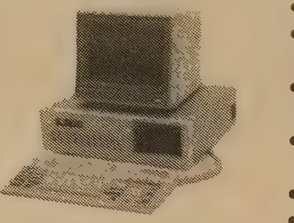

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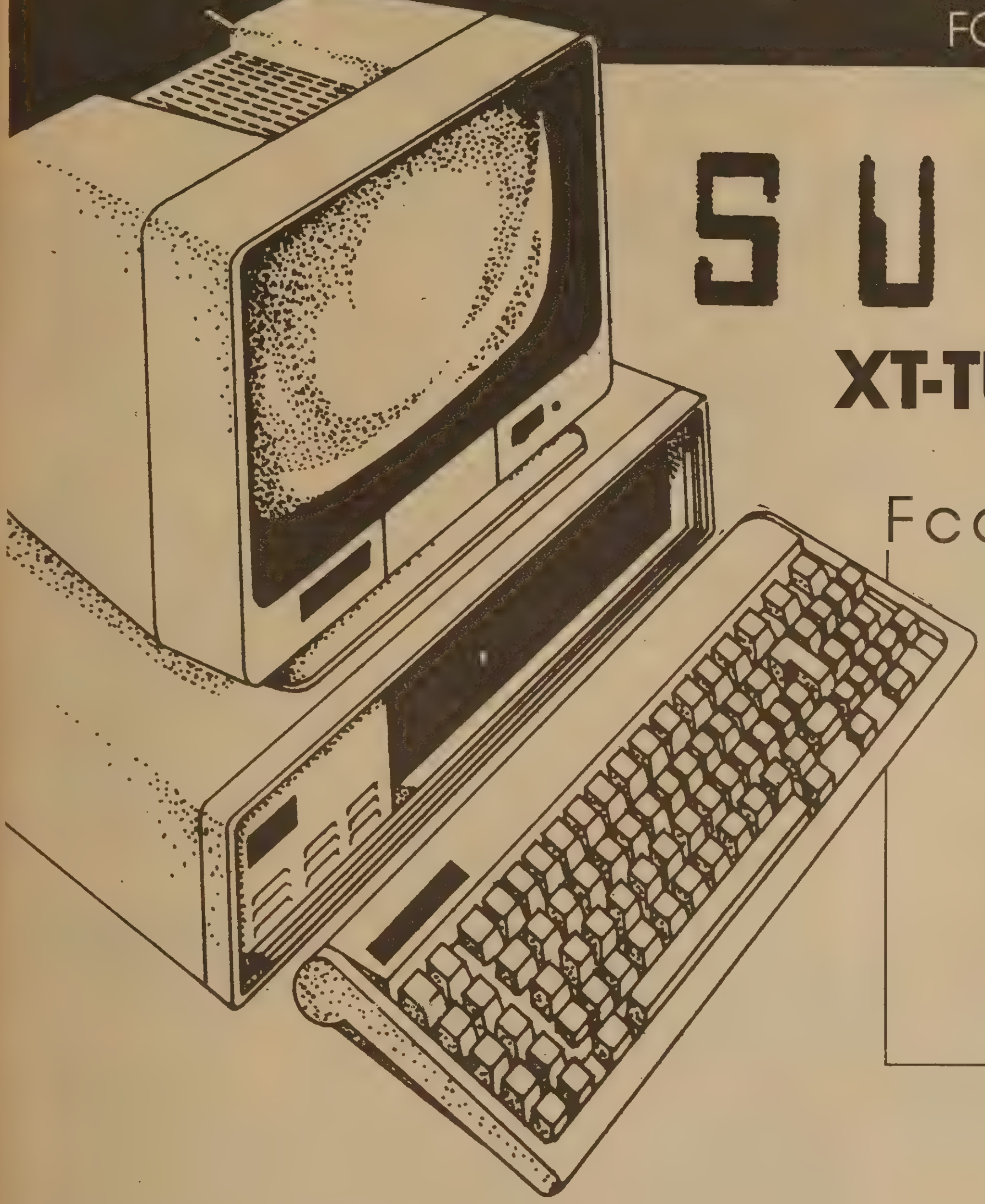

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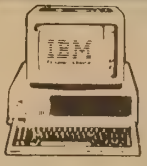

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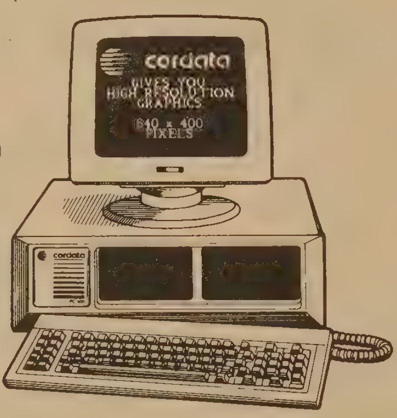
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"The Meeting Place" BBS 300/1200/2400 baud. 24 hours, no parity. AE line for public domain downloads. Apple, Commodore, IBM programs available for download. Numerous general files. No fees, all free. Call (916) 662-1838. Woodland, CA.

Family Radio Forum. (916) 481-6320. Christian RBBS for everybody.

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NATIONAL/ INTERNATIONAL

Network Users Association. 2111 Eisenhower Ave., Suite 400, Alexandria, VA 22314. (800) 638-8510 or (703) 683-8500.

TPUG World's largest Commodore Users Group. $25 annual membership entitles you to access to library of public domain software for C-64, VIC 20, PET, CBM, SuperPET, B-128. Coming soon Plus 4, C-16, C-128. New disks added each month. Also TPUG Magazine (10 per year), free access to TPUG's Bulletin Board Modem System, 24 hours, 7 days. TPUG Inc., 1912A Avenue Rd., Suite 1, Toronto, Canada M5M4A1.

Apple Co-op. 290 SW 43rd, Renton, WA 98055. (201) 251-5222.

JUG (Jefferson State Computer Users Group). Many SIGs, newsletter. Dues $5.00 year, some SIGs additional. Contact JUG, P.O. Box 457, Gold Hill, OR 97525-0457.

MicroPro Users Group of America. National group with over 200 members worldwide. Dedicated to supporting MicroPro products, especially WordStar and InfoStar, for any hardware. c/o Procyon Associates, 140 Riverside Drive, New York, NY 10024. (212) 595-4811.

Franklin Users Group International. Supporting users of II, II+, Franklins, and all compatibles. We support all members with a monthly newsletter, "The Clone Ace," a growing public domain library and personal attention. Membership $20.00 a year. Contact Douglas M. Trueman, EastWind Apt. L77, Tecumseh, MO 65760.

68796 Hackers. 68796 (68000+ IEEE-796) is the only users group supporting hobbyists constructing WICAT 150/Mini-system, Multibus, and 16/32 bit systems. In addition to the 68796 Hacker's Newsletter, we are putting together a disk library. Dues $20/year. Contact Victor R. Frank, 12450 Skyline Blvd., Woodside, CA 94062. (415) 851-7031.

Golden Apple Club, Apple II and Macintosh. Contact Stefano Minotto, Golden Apple Club, Riviera Tiso da Camposanpiero, 26, 35100 Padua, Italy.

F.O.G. 15,000 member group supporting all CP/M users. Dues of $24.00/yr. include 60-80 pg. FOGHORN monthly's access to 270+ disk library, 40+ RCP/M systems, and back issues; and a technical support hotline. All meetings conducted by 140+ local groups. Gale P. Rhoades, P.O. Box 3474, Daly City, CA 94015, (415) 755-2000.

Getec s.r.l. Contact Silvio Esengrini, Via dei Guarneri Nr. 24,-20141 Milan, Italy. Phone: 39/2/5696502, 39/21 5694185.

Italtel S.p.a. Contact Michelangello Sala, C.Na, Castelletto, 20090 Settimo Milanese, Milan, Italy. Phone 39-2-4388-4288.

PLUG (The Plus/4 Users' Group). Dedicated solely to support of the Commodore Plus/4. No regular meetings, 200 members in US, Canada, Mexico, and Europe. Newsletter, public domain software library. P.O. Box 1001, Monterey, CA 93942.

KAPPA (Memphis Kaypro Users Group). Meetings at 2 pm, 1st Saturday of the month, Room 2, Jennings Hall. Contact Hugh Lamar, 5983 Macon Cove, Memphis, TN. (901) 377-4140.

The AppleWorks Users Group (TAWUG). c/o Regional Rep, 27421 Berenda Way, Hayward, CA 94544, (415) 887-7499.

FORTH Interest Group, International Office. P.O. Box 8231, San Jose, CA 95155. For further information call (408) 277-0668.

Apricot User Group (APRICUG). Box 98, Malverne, NY 11565.

Spellbinder Users' Group has an international newsletter with useful macros written by members, advice on new applications, news, and word-processing problem solving. All experience levels. California members welcome. Write P.O. Box 14, Newark, Notts, England NG24 4TP; telephone (0636) 77313; telecom Gold/Dialcom Mailbox 72: MAG95610.

AstroSoft for the IBM PC. Promotes the use of software in astronomy and related sciences; disseminates astronomical information from databases and software. P.O. Box 4451, Hayward, CA 94540-4451.

National TeleVideo Users Group. Meets 7:30 pm, 3rd Thursday, 1170 Morse Ave., Sunnyvale. P.O. Box 22007, San Francisco, CA 94122. Call for info—David, (415) 753-1552.

Apple Fontrix Club. Monthly newsletter. P.O. Box 29857, Thornton, CO 80229-0857.

68796 Hackers. 68796 (68000+ IEEE-796) is the only users group supporting hobbyists constructing WICAT 150/Mini-system, Multibus, and 16/32 bit systems. In addition to the 68796 Hacker's Newsletter, we are putting together a disk library. Dues $20/year. Contact Victor R. Frank, 12450 Skyline Blvd., Woodside, CA 94062. (415) 851-7031.

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Apple Fontrix Club. Monthly newsletter. P.O. Box 29857, Thornton, CO 80229-0857.

ASSOCIATIONS

Community Entrepreneurs Organization (CEO). Business networking group meets in nine chapters around the Bay Area. Share information on tech and non-tech business issues. Topics, brainstorming and a chance to meet others in business. Various week nights. Contact Dr. Crandall, P.O. Box 2781, San Rafael CA 94912, (415) 435-4461. Also new Bulletin Board, (415) 552-9070.

IEEE Computer Societies Committee on Artificial Intelligence and Expert Systems sponsors an open meeting the third Thursday of every month, 7-10 pm, at Foothill College. For more information please call the IEEE council office at (415) 327-6622.

Computer Professionals For Social Responsibility. P.O. Box 717, Palo Alto, CA 94301. (415) 322-3778.

Computer Professionals For Social Responsibility (East Bay). 902 Rose Ave., Piedmont, CA 94611. Contact Bruce Joffe, (415) 768-0288 days, (415) 654-5263 eves.

FOCUS-MED (Federation of Computer Users in Medicine). Open to all physicians and health professionals. Practice management consultant registry. (415) 626-4600.

FOCUS-DDS (Federation of Computer Users in Dentistry). Open to all dentists and dental professionals. Practice management consultant registry. (415) 626-4600.

ITRA Independent Technical Representative Association is an organization dedicated to helping people better understand the Personal Computer (IBM). Contact Tim Jones, 870 Market St. #609, San Francisco, CA 94102, (415) 421-4872 for meeting time and date.

MCTUG (formerly Marin County TRS-80 Users' Group). MS-DOS, CP/M and Tandy users group. Meets 7:30 pm on the first Monday of the month at the Larkspur Masonic Lodge, 1122 Magnolia Ave., Larkspur. Contact Dr. Frank Hovell, 907 Sprucewood Court, Petaluma, CA 94952, (707) 762-5740.

PRACSA (Public Remote Access Computer Standards Association) offers to clubs, schools, and user groups a Speakers Bureau. The purpose of the bureau is to act as a resource to these groups in obtaining speakers of high quality for their meetings. The volunteer speaker is provided free to the group. Contact (408) 262-5150. Meetings 4th Wednesday, 7 pm, Vadic Cafeteria, 222 Caspian Dr., Sunnyvale.

San Bruno Computer Core. Meets 7:30 pm alternate Wednesdays. Call (415) 952-9309 for address and info.

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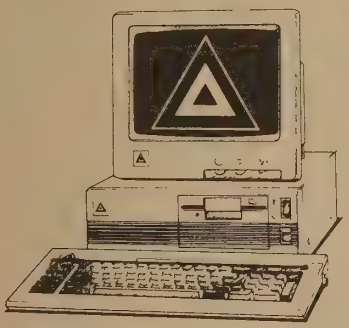

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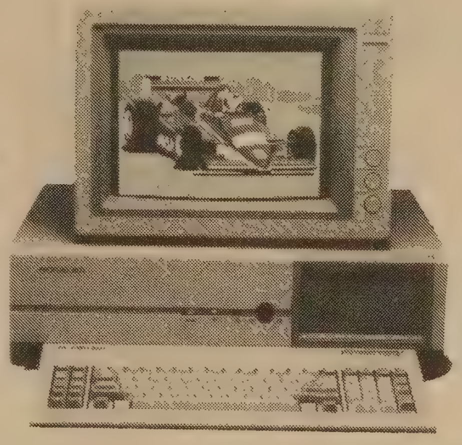

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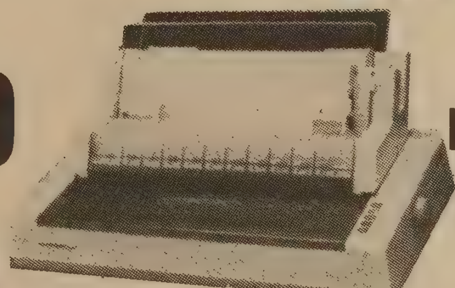

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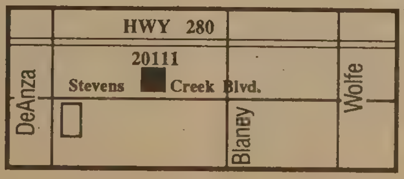

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San Francisco Computer Society (Formerly the San Francisco First Osborne Group). A society for users of portable computers and/or the CP/M operating system. P.O. Box 783, San Francisco, CA 94101-0783. Meetings on fourth Thursday of the month, St. Aidan's Church, Diamond Heights and Goldmine Dr. in SF. All are invited. Dues $10/yr.

Software Entrepreneurs' Forum, PO Box 61031, Palo Alto, CA 94306. (415) 854-7219.

PATCA (Professional & Technical Consultants Association). 1330 S. Bascom Ave., Suite D, San Jose, CA 95128. (408) 287-8703.

BAYMUG. Bay Area Micro-Processor User Group. General computer group, mostly CP/M and S100. All types of interests welcome. Celebrating our 10th year of meetings! Meetings 1441 Rolins Rd., Burlingame, CA, 1st Thursday, 7:30 p.m. Contact Victor K. Bailey, P.O. Box 248, Pleasanton, CA. 94566. (415) 462-4442.

Byte Hum. A user group for computer buffs concerned with human needs, or social activists who want to learn about ccomputers. Let's put all that knowledge to work for social transformation! Sponsored by the Humanist Party. Contact Rick Wall, (415) 495-6555 or (415) 337-2530.

Society for Technical Communication. STC is a professional organization dedicated to furthering the art of technical communication. The San Francisco chapter has about 200 members. Writers, artists and others interested in technical communications are welcome. Meetings 3rd Wednesday of every month, 5:30-7:00 pm; call Sarah Collings, (415) 383-9631 for info.

North Bay Users Group (NBUG). Family computer club devoted to all aspects of computing. Monthly newsletter, library, software demos, etc. Meetings at "CAVE" school, 2nd Tuesday of the month, 7:30-10 pm. Contact Gloria Hutchinson, P.O. Box 7116, Vallejo, CA 94590, or call (707) 644-9327.

Robotics Society of America. Dedicated to disseminating information about robotics, artificial intelligence and machine controls. Mailing address 36 Newell St., San Francisco, CA 94133, (415) 673-2376. San Francisco chapter meets 2nd Monday of the month, 8 pm, Homestead Savings 5757 Geary Blvd. Contact Jim Strope, (415) 552-6564. Berkeley branch meets 6:30 pm, last Wednesday of the month, Claremont Branch, Berkeley Library, Ashby and Benvenue. Contact Soren Knudson, (415) 843-2344. Sunnyvale Pongbotics meets in Sunnyvale on the De Anza College campus, Room 22, first three Wednesdays of the month, 7:30 pm. Contact Bill Lee, (408) 281-2252.

Silicon Valley Computer Society. Meetings 7:30 pm, second Wednesday of the month, Duane and Britton SE corner, Sunnyvale. Contact Dick Verna, (408) 262-2679 for information.

PicoNet. A microcomputer users group. Meets on the second Thursday of each month at 7:30 pm at CMX Corp., 2230 Martin Ave., Santa Clara, CA. Formerly specialized in CP/M software, but has broadened its scope to encompass the entire field of computer-related high technology. Extensive library of CP/M pd software; preparing PC-DOS library. Monthly meetings, periodic newsletter, BBS, C language SIG. Call (408) 374-8090 for recorded message on next meeting's topic.

MicroPsy. Users group devoted to the application of microcomputers in the psychological fields. Meetings first Saturday of the month, noon. Call for information: Martin Schaaf, M.S., (415) 454-6761.

C Group of Northern California. Forming C programmer support group. Group's function will be to exchange information, discuss programming techniques and problems, etc. Anticipate monthly meetings at rotating locations. First meeting to be held 7:30 pm, Tuesday evening, November 4th, in Mill Valley. Call (415) 383-7006, or contact Ben T. Choate III, P.O. Box 1533, Mill Valley, CA 94942.

BADGE-Bay Area Developers Group. Meets third Thursday of every month, 7:30 pm, at Stanford University Building 200, Room 002. Contact Tom Rokicki or Bob Alverson, (415) 326-5312 for information.

California Genealogical Society Computer Interest Group. Meets second Saturday of the month, 300 Brannan St., 4th Floor, San Francisco. Call W.R. Shepard, (415) 989-5441 for information.

Pro*BUG—Professional Business Users' Group. Formerly Xerox Users Group. Meets 1095 Irvine Blvd., Tustin, 1st Saturday each month, 9 am. BBS (714) 543-3187, 300 baud, Xmodem protocol. CP/M, PC, MS-DOS. Contact Allen Ashley, (714) 537-4608.

USER GROUPS

APL

APLBUG (APL Bay Area Users' Group) has monthly meetings and a newsletter for people interested in APL (A Programming Language). It meets the third Monday of each month at 7:30 pm in the offices of I.P. Sharp Associates, 220 California Avenue, Palo Alto. Annual dues are $15. Contact Curtis Jones, (408) 292-4060, for information.

AT&T

Bay Area AT&T PC6300 Users' Group. Official group supported by AT&T. Meeting time and location vary. Contact Victor A. Borromeo, 764 St. Francis Blvd., Daly City, CA 94015. (415) 477-8124 days, (415) 991-4164 eves/weekends, or Maurice Aranda, (415) 972-5436 for information. BBS (415) 652-8277, 1200/2400, 8-N-1, 24 hours, 7 days.

ACTRIX

ACTRIX Computer Enthusiast Society. Membership ($20/yr) provides public domain software, group rates, discounts for owners of Actrix/Access Matrix microcomputers. Meetings at Sunnyvale Community Center, last Wednesday of the month, 7 pm. Contact K. Edward Lynch, 1405 Phelps Ave. #29, San Jose 95117, (408) 756-5104, for more information.

ADAM

Coleco Adam Users Group. For info send SASE to: CAUG, 2316 Stuart St., Berkeley, CA 94705. Voice (415) 549-3437, data (415) 549-3378.

South Bay ADAM Users' Group. Now forming a users' group exclusively for the ADAM enthusiast in the south bay area. Call Steve for more info at (408) 253-4190.

AMIGA

First Amiga User Group. We offer demonstrations of software and hardware, a public domain library, and general user help at our monthly meetings, which are held on the first Tuesday of each month in Belmont, CA. Meeting address 1300 Fifth Ave., Belmont, CA, 94070, 7 pm, first Tuesday of the month. Contact Tim Avery/Kayvan Pejooh, (415) 595-5452.

First Amiga User Group the South Bay. End-users, enthusiasts, developers and programmers all welcome. Meetings 2nd Fridays, library, 40 N. Milpitas Blvd., Milpitas, 7-9 pm. Contact Jim Thomas, P.O. 1863, Fremont, CA 94538, (415) 651-0201. BBS (415) 659-9169.

ACCESS. The Amiga and Commodore Computer EnthusiastS Society (ACCESS) holds its meetings on the 3rd Wednesday of the month in Room 107 of the Chabot Building in Hacienda Business Park, Pleasanton, CA. Contact Skip Perkins, (415) 443-4778 for information.

Sacramento Amiga Computer Club (SACC). Meets the second Wednesday of each month at the Sacramento Municipal Utility District (SMUD) auditorium, 6201 S. St. just off Hwy 50 at the 59th or 65th St. exit, 7 pm. For more information call George Leone, president, at (916) 944-7400 or write to SACC, P.O. Box 19784, Sacramento CA 95819-0784.

APPLE

San Francisco Apple Core Special Interest Groups, BBS, large public domain software collection, seminars, newsletter, group buys of hardware / software, help network. Meetings: (Apple) Daly City library, 3rd or 4th Saturday of each month, 40 Wembley near Gellert (Hickey exit), 10 am, call 433-7170 for carpool info. East Bay meeting, Concord library, 2618 Telegraph Ave, 1st Tuesday each month, 7 pm. Call 845-4810 for info. Mac Meetings: 3rd or 4th Saturday, Daly City Library, noon. Call 433-7170 for info; also Concord library, 3rd Saturday, 10 am, call 427-4821 for directions. Info: SF Apple Core, 1515 Sloat Blvd., Suite 2, San Francisco, CA 94132. (415) 566-2342 (voice), (415) 474-8608 (BBS/modem).

The AppleWorks Users Group. c/o TAWUG Regional Rep., 27421 Berenda Way, Hayward, CA 94544. (Society For The Prevention of Cruelty To Apples) Apple user/interest group. Features: Monthly meeting with newsletter, raffle and door prize of hard/software, demonstrations, lectures, discussions. $20 per year, pro-rated after June. Meetings last Wednesday of month, 7:30 pm. Contact Paul Meyerholtz for info (415) 490-8209.

Association of Apple 32 Users Macintosh, Lisa. An association of "knowledge workers" who wish to share information on products, applications, and events. User-developed, non-copyrighted software, SIGS, newsletter. P.O. Box 634, Santa Clara, CA 95052.

San Leandro Apple Eaters Users Group. Apple II users group meets the first Thursday of each month at San Leandro High School (room 213). New owners to experienced users welcome: Appleworks, education, hardware/software, telecommunications. Call Open Campus BBS area 11 (415-895-0135) or voice (415-782-9250) for more information.

Pen-Apple (Peninsula Apple Users Group) Meetings 2nd Thursday each month at 7:30 pm, Ampex Corporation cafeteria, 401 Broadway, Redwood City. Contact Bob Runyon, (415) 592-1167.

Diablo Valley Apple Users. Apple II family users and Macintosh users. Special Interest Groups meet monthly. Featuring a library of public domain software collection and our own Club's DOM's, monthly newsletter, group buys of hardware and software as well as monthly demos of new products. Meetings held on 1st and 3rd Friday each month at 7 pm at the Willow Creek Center, 1026 Mohr Lane in Concord. Contact Merle Zmak, president, P.O. Box 5031 Concord, CA 94524, or call (415) 672-7596 for additional information.

South Peninsula Apple Computer Enthusiasts (c/o David Harris, P.O. Box 1257, Palo Alto, CA 94302) meets near the Varian Credit Union, Bldg. 4C, 611 Hansen Way, Palo Alto, at 7:30 pm on the first Tuesday of every month to exchange information about available hardware, software, events, publications, and methods on Apples, and to encourage collaboration on projects. Call (415) 856-9126 answering machine takes 30-second messages.

Roseville Apple Core. Discover your Apple's Core! We meet twice each month at the Roseville Public Library with additional SIG meetings for AppleWorks, BASIC and TelCom. We also feature a monthly bulletin, large public domain library, and new member's disk, all for just $12 yearly membership. C'mon out and bring a friend. Contact Dave Smart, P.O. Box 1377, Roseville. (916) 961-2249.

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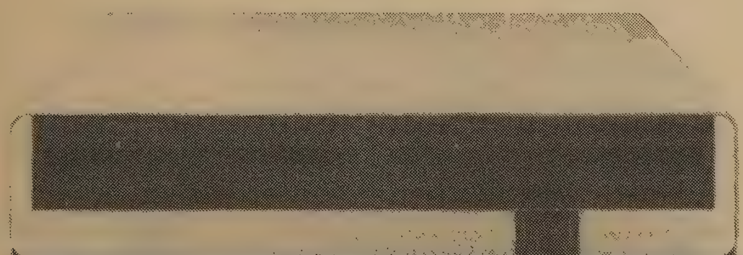

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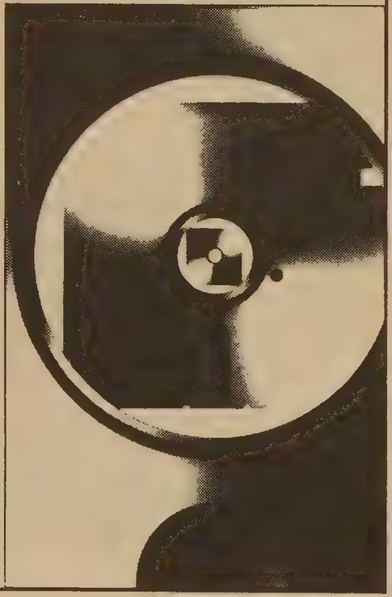

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COMING NEXT ISSUE

Coming next month...

In the March issue of Microtimes, we'll take a look at the new products for the Macintosh premiered at January's Macworld Expo, from databases to desktop publishing.

Also, Stephan Wickham talks with the Ashton-Tate alumni at Migent, who are currently engaged in creating what they hope will be a revolutionary approach to database management; Bennett Falk tells UNIX users how to get the most from Usenet; Ken Milburn offers hints on eliminating those repetitious keyboarding tasks.

For this and more, check out the March issue, on the street February 20.

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All Wherehouse locations and in newsracks at your nearest BART station

Apple Sac. (Sacramento) Meetings on first Wednesday and third Tuesday every month at Madison School, 5241 Harrison St. (corner Harrison and Madison Ave. 1/4 mile west of 180 on Madison Ave.), 7:30 pm. Contact Ray Beam, president, P.O. Box 254645, Sacramento, CA 95825, (916) 448-6115 for more information.

Stanislaus Apple Group. You're invited! Stanislaus Apple Group meets 2nd Tuesday each month, 7 pm, Room 124 Ag Bldg, Modesto JC, main campus. We support Apple II and compatibles, Apple III, Mac, Lisa. Newsletter, BBS (209-529-3202), extensive PD software library. More info call (209) 523-7289 (eves).

Santa Cruz Apple User's Group meets at Cabrillo College, Aptos, ILC building, 1:30 pm, second Sunday of the month. For information contact Tim Ruckle, president, (408) 462-3154.

Apple Gardens. New Apple II users group. Share info, programs, group purchases. Brand name disk, new products, software demos and evaluations. Call Tom Turley at (415) 468-4045.

Apple P.I.E. Meets at Lynbrook High School, Room 30, 1280 Johnson Ave., San Jose, 4th Thursdays, 7:30 pm. Contact George Ingalls, P.O. Box 2185, Santa Clara, CA 95055.

ATUNC-Apple Three Users of Northern California. Explanations, demos, large public domain library. Mailing address: 220 Redwood Highway 184, Mill Valley, CA 94941. On Apex and Draconet BBSs.

ASHTON-TATE

Framework/Editor Bay Area Users Group (FREDBUG) Purpose of the group is to share programming and applications techniques under FRAMEWORK for the business and technical professional. Call for info: Rudi Wiedemann, (408) 730-4159.

San Francisco dBase User Group For advanced users and programmers. Meets once per month. Membership required for attendance. Contact Frank A. De Coster, 1100 Gough St., San Francisco, CA 94109, (415) 474-6693.

East Bay dBASE Users Group. Meets 3rd Sunday, 1 pm. Call Darrell Bross (415)873-7522 or Alexandra Saur (415)893-7637 for meeting address.

dBase II/III SIG of SF PC Users Group meets third Monday of each month, 7-8 pm, Fort Mason, San Francisco. Contact Ron Freshman, (415) 459-6613.

DBDVLPRS (dBaseIII Program Developers). Call for information on meeting time and location: Gil Orlik, (415) 931-0377, 2240 Buchanan St., SF 94115.

Framework SIG of SF PC Users Group. Users of all levels, programmers, developers. Meetings at Fort Mason Center, San Francisco, 3rd Monday of each month. 7-8 pm. Contact Tom Reichert, (415) 391-4687.

Framework Users Group of San Francisco Bay Area. Meets at 2 pm on the Second Sunday of each month. Meeting location may vary for the convenience of members. For information call (415) 521-4643.

ATARI

ABACUS (Atari Bay Area Computer Users Society) All ATARI users or prospective users are welcome. Membership ($15/year) provides public domain software, low cost blank disks, monthly newsletter, group prices on hardware and software, help from experts, low cost classes for beginners. Meetings first Saturday of the month, Fort Mason, SF, Room 300, Bldg. C, 10 am-2 pm. Contact Bill Zinn, P.O. Box 1823, Mill Valley, CA 94941. (415) 753-8483.

A.C.M.E. (Atari Computer Marin Enthusiasts) Meets monthly in Marin, third Thursday evening monthly from 7 pm on. Gallinas School, 177 N. San Pedro Rd., San Rafael. Contact Bruce Frank, (415) 435-6020, P.O. Box 222, Tiburon, CA 94920.

Diablo Valley Åtari Computer Enthusiasts (D.A.C.E.) Contact Mike Randis, 3602 Dumbarton St., Concord, CA 94519, (415) 798-6565.

Bay Area Atari Users Group We have a 24-hour 300/1200 baud BBS at (408) 249-7722. Meetings at Bracher School Cafeteria, corner of Bowers and Chromite, Santa Clara, CA, first Monday of the month. Contact Frank Nagle, P.O. Box 50459, Palo Alto, CA 94303, (415) 791-5461 for more info.

San Leandro Computer Club Although open to all computer users, this group is primarily oriented to Atari computer owners. Our club is considered one of the best in the country, worthy of consideration by both novices and experts. Meetings 1st Tuesday of the month at San Leandro Community Library, 300 Estudillo Ave., San Leandro, CA. Contact Phil Mitchell, P.O. Box 1525, San Leandro, CA 94577-0152 for more info, or call (415) 351-2208.

COAST User Group (California Original Atari ST). Public domain disks, MIDI, support, help for the Atari ST line of computers. Advice and programs not to miss. Meetings at Clorox Building, 1221 Broadway, Oakland, CA, 3rd Wednesday each month, 7-10 pm. EaST COAST meets 2nd Tuesday of the month at 1015 Esther Drive, Pleasant Hill, 7:30 pm. Members only. Dues $24.00 yr. Contact Chuck Thorp, president, 1015 Esther Drive, Pleasant Hill, CA 94523, (415) 945-1949 for information.

Redwood Atari Group (R.A.G.) Meets 4th Saturday, 1-4 pm, at Coddingtown Meeting Room, 1100-B Coddingtown Center, Santa Rosa. Contact Mikkel Lawrence, (707)585-3949, 21 Creekwood Sq., Rohnert Park 94928.

ATTACHE

Attache UNL Otrona may be dead, but the Attache Users News Letter Lives ON!! Contact Jim Ayers, 301 Poplar St., Mill Valley, CA 94941. (415) 388-4805. Meetings 7:30 pm, 2nd Wednesday.

First Attache User Group News. Support, news, and co-operation for users of Otrona Attache and 2001 portable computers. Since '82. Contact Charles Raisch, 1827 Haight St. Suite 16, San Francisco, Ca 94117, (415) 221-3415.

AUTOCAD

AutoCAD Users Group. Call Gen Katz (415) 530-8870 for information about future meetings.

AutoCAD User Group. Call Volker Ackermann, (415) 485-0958 for information.

BASIS

Bay BUG Basis 108 Users meet every first Friday of the month at College of Alameda Computer Room, 7:30 pm. Contact Roger Bernhardt, 536 Mission, San Francisco or call (415) 221-0262 for more information.

BONDWELL

Bondwell Users Unite! Trying to start group, need your help. All levels welcome. Meeting address 405 Stierlin Rd. #17, Mountain View. Time and date to be announced. Call Tom Gatlin at (415) 961-0450 for more information.

BPI

Bay Area BPI Users Group meets the fourth Tuesday of each month. For more information contact Mitch Paioff, 5097 Tisdale Way, San Jose, CA 95130, (408) 866-4310.

CANNON

Cannon AS 100. Anyone who owns a Cannon AS-100 computer and is interested in forming a group to share problems and solutions write HTF-4111 Hilltop, Vacaville, CA 95688.

CASIO

Casio Research Project. Discussion and collaboration; creation of plug-in expansion board using VLSI chip. Share programs. Meetings TBA. Contact Julius M. Zebrowski, (415) 969-9458.

COMMODORE

San Francisco Commodore Users Group Public domain library, classes, tech help, in depth demonstrations, monthly newsletters, Epromer, savings on purchases, all this and more. BBS (415) 626-6330, (415) 268-3769 300 baud. Meeting address Log Cabin, Storey Ave. at Ralston, 3rd Friday, 7:30 pm. Contact Malcolm Lowe, (415)832-1539.

20/64 Computer User Group San Jose Chapter meets the first Sunday of each month at Mercury Savings and Loan, 859 Blossom Hill Road (corner of Blossom Hill and Pearl), San Jose, from 6 to 9 pm. For further information call (408) 733-2637 or write to P.O. Box 18788, San Jose 95158.

20/64 Computer User Group San Jose North Valley Chapter meets the second Saturday of each month at the Milpitas Library, 40 North Milpitas Boulevard, Milpitas, from 10 am to noon. For further information call (408) 733-2637.

20/64 Computer User Group Cupertino Chapter meets the second Sunday of each month at the Cupertino Public Library, 10200 Torre Avenue, Cupertino, from 6 to 9 pm. For further information call (408) 733-2637.

20/64 Computer User Group Campbell Chapter meets the fourth Tuesday of each month at the Campbell Public Library, 70 North Central Avenue, Campbell, from 6:30 to 9:30 pm. For further information call (408) 733-2637.

Diablo Valley Commodore Users Group Meetings Contra Costa Water District Auditorium, 1331 Concord Ave., Concord, CA, second Thursday of month at 7:30 pm. Write DVCUG, P.O. Box 27155, Concord, CA 94527, or call (415) 838-2838 for more info.

Napa Valley Commodore Computer Club Meets first and third Mondays, 7:30 pm, at Northwood Elementary School, 2214 Berk St., Napa. Take Redwood Road to Dover St. to Berk St. Contact President Dick Bull (707) 257-3773 or vice-president Roger Pruym (707) 253-1690 for more info.

Lake County Commodore Users Group Contact Al Reuss, P.O. Box 388, Clearlake, CA 95422.

Marin Commodore Club Meets at Redwood High School, Corte Madera. Visitors welcome. Contact Elmer Johnson for information: 665 Las Colindas, San Rafael, (415) 479-0426.

Peninsula Commodore User Group Public domain library, demonstrations, user help, newsletter. Membership is $25 per year. Non-members pay $2 at door. Meetings are 3rd Tuesday of each month. Meeting place is the Church of the Good Shepherd Hall, 1300 5th Ave., Belmont (across from city hall). For more info call (415) 595-5452 between 9 am and 6 pm, or call our BBS at the same number after 6 pm.

EPSON

Bay Area Epson Salts 125 Del Centro, Millbrae, CA 94030, (415) 697-0567.

Epson Users of San Francisco Bay Area Epson group has nationally circulated newsletter Valnews: 400 members mostly QX-10 owners, growing software library. Meetings focus on mutual support. Mainly Valdocs and other applications. Meetings first Thursdays. 7 p.m. Fort Mason Center, Bldg. C, Room 205, San Francisco. Contact Alan Magary, 904 Irving St., Suite 271, San Francisco CA 94122, (415) 661-9270.

Napa Valley Epson Users Group 1307 Hestia Way, Napa, CA 94558, (707) 253-8727.

FORTH

FORTH Interest Group, Berkeley Chapter. Meets 2nd Saturday of the month at 1 pm, 10 Evans Hall, UC Berkeley. Contact Mike Perry, (415) 644-3421.

FORTH Interest Group, Monterey/Salinas Chapter. Contact Bud Devins, (408) 633-3253.

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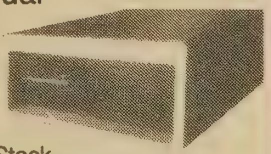

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FORTH Interest Group, Sacramento Chapter. Meets 2nd Tuesday of the month, 7 pm, 170B 59th St., Room C. Contact Tom Ghormley (916) 444-7775.

FORTH Interest Group, Bay Area Chapter. Meets 4th Saturday of the month, 10 am advanced, 1 pm beginning, at ABC Christian School Auditorium, Dartmouth and San Carlos Ave., San Carlos (408) 277-0668.

FORTH Interest Group, Stockton chapter. Contact Doug Dillon (209) 931-2448.

GAVILAN

Gavilan User Group. Meets 2nd Thursday, 7 pm, Lockheed Bldg 162. Contact R.W. Brown, 780 Manx Ave., Campbell, CA, (408) 379-2774. Gavilan BBS (408) 374-3974, 300/1200, 24 hours, free.

HEATHKIT

San Jose Heathkit Users Group. Meets first Wednesday at 7 pm at the Heathkit store on South Bascom Ave. in Campbell.

B.A.H.U.G. Heath/Zenith computers, CP/M and MS-DOS. Meetings at 2001 Middlefield Rd., Redwood City, CA, 7 pm, 2nd Thursday. Contact John Lindquist, 642 Hollenbeck Ave. #1, Sunnyvale, CA 94087.

NBHZUG North Bay Heath/Zenith Users Group. Devoted to Heath/Zenith computers in specific and MS-DOS, CP/M computers in general. Beginners and advanced. Meeting place varies, time 2nd Saturday, noon. Contact Martin Schaaf, (415) 454-6761 for information.

HEWLETT-PACKARD

HP Portable People user group to be formed. Contact Michael Felsenstein, 2366 40th Ave., San Francisco, CA 94116, (415) 564-8279.

IBM

South County PC Users Group Meetings held second Thursday of each month, at Software Center, 22406 Foothill Blvd., Hayward, CA. Public Domain club disks, newsletter and help on MS-DOS problems. Contact Debra Taylor, P.O. Box 7656, Fremont CA 94537-7656 for more info, or call (415) 276-5111.

Silicon Valley Computer Society. New users SIG, 7:30 pm, 4th Wednesday; call Dick Meyer, (408) 723-0159. dBASE III SIG, 7:30 pm, 4th Thursday; call Thaine and Barbara Anderson, (415) 345-0152. WordPerfect SIG 7:30 pm, date variable; call Martin Van Der Pool, (408) 238-8434. Software tools and graphics SIG, 7:30 pm, 4th Tuesdays; call Hal Sampson, (408)866-7833. Artificial Intelligence SIG, 7:30 pm, 3rd Tuesday; call Kent Byron, (415) 656-0410. Telecom SIG, 7:30 pm, 1st Monday; call Scott Sawicki, (408) 243-8781. Lotus 1-2-3/Symphony SIG, 7:30 pm, 3rd Thursday; call Bill Welch, (408) 247-3405. C programming SIG, 7 pm, 3rd Tuesday; call Fletcher Johnson, (408) 946-0960.

SVCS (Silicon Valley Computer Society). IBM users group. Meets second Wednesday at 7 pm at the Westinghouse auditorium located on the corner of Duane and Britton Aves., in Sunnyvale. For more information call Kent Safford, (408) 286-2969.

California PC LAN Users Group, 1625 The Alameda, Suite 511, San Jose, CA 95126. (408) 289-1711.

Diablo Valley PC. An IBM PC User Group, monthly meetings, newsletter and public domain software library. Contact Jim McDonnel, president, 2261 North Main St. 117, Walnut Creek, CA 94596, (415) 933-1270.

IBM XT Compatible Club SF. Support for generic IBM XT clones. 431 Ashbury St., SF, CA 94117. Meets 2nd Monday of the month, Fort Mason C260, 7 pm. Call (415) 552-8648. BBS (415) 552-9070.

The Bay Area Computer Society Emphasis on IBM PCs, networking and multi-user systems. P.O. Box 20583, Oakland, CA 94604, (415) 839-5786.

IBM PC Users Group of the Redwoods. Anyone interested in PCs and/or compatibles is welcome. Meetings at Yulupa School, 2250 Mesquite Dr., Santa Rosa, CA, 4th Thursday of the month, 7 pm. Contact Michael Adams, P.O. Box 5055, Santa Rosa, CA 95402, (707) 664-8320, (707) 546-3619.

Sacramento PC Users Group. Over 1000 members. Meetings at Holiday Inn Holidome, 5321 Date Ave., 7 pm, 3rd Wednesday. Contact Barney McCauley, P.O. Box 685, Citrus Heights, CA 95610, (916) 484-1048, or call the club number (916) 332-1944.

The Commodore Connection. Newsletter, BBS, public domain disks, dealer support and more. Approved member of Commodore World. Call (415) 458-3318 8 am - 8 pm or 8 pm - 8 am for the BBS. Meetings 1st and 3rd Mondays, Neighborhood Center, Civic Ave., Pittsburg, CA, 7:30 pm.

Commodore User's Group of Hayward. The CUG of Hayward meets the first Saturday of each month from 3 to 5 pm at the Commodore Computer Center located at 22521 2nd St., Hayward. Call (415) 886-1916 evenings between 5 - 8 pm or (415) 537-1323 days between 10 am and 5 pm.

NBUG (North Bay Users Group). Contact Jim Stephens, president, 124 Delgado St., Vallejo, CA 94591, or write P.O. Box 7116, Vallejo, CA 94590.

Santa Rosa Commodore Users Group. Walter Saures, President, 333 East Robles Ave., Santa Rosa, CA 95407-7921. (707) 584-7009. Information line, (707) 526-6464 SRCUG-BBS.

Family Roots Searchers. Using Commodore SX-64 computer, Dynax DX-15, PractCalc II, Word Pro 3 Plus, Family Tree. Meetings by appointment only. Vera Ross, Atchison Village, Richmond, CA 94801-2942, (415) 235-8716.

PLUG (The Plus/4 Users' Group). Dedicated solely to support of the Commodore Plus/4. No regular meetings, 200 members in US, Canada, Mexico, and Europe. Newsletter, public domain software library. P.O. Box 1001, Monterey, CA 93942.

Silicon Valley Commodore Computer Club. Meets 4th Wednesdays, H.P., 5301 Stevens Creek Blvd. at Lawrence, 7 pm. Contact Roger Weiss, (408) 942-2442.

ACCESS. The Amiga and Commodore Computer EnthusiastS Society (ACCESS) holds its meetings on the 3rd Wednesday of the month in Room 107 of the Chabot Building in Hacienda Business Park, Pleasanton, CA. Contact Skip Perkins, (415) 443-4778 for information.

C.O.W. Commodore Owners Workshop. Meets at the San Bruno Rec Center (in San Bruno Park) the third Thursday of every month from 7-10 pm. Machines welcome. We have a huge PD library that users can check out. We usually have demos each meeting; we have BASIC programming classes and help each other along. For further information call the San Bruno Parks and Rec at (415) 588-1201.

Fairfield Commodore User Group. Meetings Solano County Education Bldg., 1st and 3rd Mondays. Contact Ben Harris, 1182 Dana Dr. Fairfield 94533, (707) 422-1669.

FUNHUG — Fremont, Union City, Newark, Hayward Users Group. For users of Commodore 64, 128, and Amiga computers. We have software/hardware reviews and demos, plus open discussion time. We have over 90 disks in our library. Bring $2 to help pay for the meeting place. Group meets every third Wednesday at 7:45 at 5445 Central Ave., Newark. For more info and a map send SASE to Russ Fisher, 36015 Pizarro Dr., Fremont, CA 94536.

COMPAQ

SF Compaq Users Group is now a SIG of the SF IBM PC Users Group. For information please call D. Blow at (415) 221-2764.

COMPUPRO

Bout Time, By God CompuPro user group forming in San Francisco. Call (415) 665-4733 or write to Barry Hermanson, 1509 5th Ave., San Francisco, CA 94122 for information.

CROMEMCO

Silicon Valley Cromemco Users Meets 3rd Tuesday of the month at MCM Enterprises. 215 Hamilton Avenue, Palo Alto, CA. Call Emily Ott at (415) 854-5818 for details.

DATAFLEX

Dataflex User Group. For more nformation call Alex at (415) 433-7944.

DYNABYTE

Dynabyte Announcing M.A.D., Mutual Assistance, Dynabyters (Dinosaurians?) For owners of this orphan Z80 S100 machine. Call Woody McPheeters, (415) 548-3126 or write 3128 King St., Berkeley, CA 94703.

EAGLE

Eagle Computer Users Group. P.O. Box 3381, Saratoga, CA 95070, (408) 972-1965. General meetings are held on the second Saturday of the month at Mercury Savings, 350 Showers Drive, Mountain View (San Antonio Center) from 9:30 am to noon.

Screaming Eagles User Group For 8 and 16 bit Eagles. Quarterly newsletter, public domain disk. On CompuServe (CLUB) Sec. 3. $10/year individual, $20/year business. 101 Parnassus #1, San Francisco, CA 94117. (Voice) (415) 661-4362.

Eagle Computer Users Group —ECUG. Meets 2nd Mondays, 7 pm, 6132—66th Ave. (Southgate Library), Sacramento. Contact W. Jud Boies, P.O. Box 163506, Sacramento, CA 95816, (916) 443-1060.

ENABLE

ENABLE Users' Group. Supporting users of Enable, the integrated software package. Monthly meetings in San Francisco (contact Evan Christensen, 415/469-1863) and Walnut Creek (contact Sandi Baker, 415/944-0426). "Enabling" is a bimonthly newsletter for all users of the software. Write for free sample: Enabling, 591 Redwood Highway, Suite 3210, Mill Valley, CA 94941.

SF PC jr User Group meets monthly. Lectures and discussions on the usage of IBM PC jr software and hardware. Software and books library. For more information please send SASE to 2336 Market St., Suite 20, San Francisco, CA 94114. Meetings at 1550 Bay St., SF, every first Sunday at 7:30 pm.

San Francisco PC Users Group. Largest SF group focusing on IBM and compatibles. Over 150 disks of public domain software, excellent monthly newsletter. 800+ members, $30 yr. Write 3145 Geary Box 155, San Francisco, CA 94118. Meetings 8 pm, 3rd Mondays, Bldg A Fort Mason.

Monterey Bay PCjr Users Group. Meets at Legacy Computers, 431 Tyler, Monterey, CA 93940. Usually meets second Thursday of the month. Contact Lloyd Reece, (408) 899-5795. Mail to Box 1191, Seaside, CA 93955.

Valley PC Users Group. Individuals and corporate users of the IBM PC and compatibles; guest speakers from major vendors, public domain software, exchange problems and solutions. BBS 24 hours (209) 952-5021. Meeting address 731 Brookside Road, UOP School of Pharmacy, Rotunda Bldg., Stockton, 7 pm, 1st Tuesday. Contact Francis Pillow, P.O. Box 77748, Stockton, CA 95207, (209) 478-9697.

IBM AT Clone User Group of SF. Support for IBM AT clones. Meets every Wednesday, 401 Alabama #101 (cross street 17th St.), SF, 7 pm. Call (415) 552-8648, BBS #552-9070.

FUNHUG PC—Fremont, Union city, Newark, Hayward User Group. For recreational/home users of IBM PC and compatibles. We meet on the third Wednesday of each month at 5445 Central Ave., Suite 1, Newark, at 7:45 pm. We have software/hardware reviews and visits from manufacturers. Our library contains over 250 disks of public domain software. Bring $2 to help pay for meeting place. For more info send SASE to Russ Fisher, 36015 Pizarro Dr., Fremont, CA 94536.

Marin-Sonoma PC Users Group. Meets last Tuesday of the month, 7:15 pm, in the San Rafael Board of Education Building at Woodland and Seibel. Classes, SIGs, 24 hour BBS at 415/927-1216. Emphasis on business applications and solutions. For additional information call 415/525-6624, 415/927-1212.

PC Desktop Publishing User Group. 431 Ashbury St., SF, CA 94117. Meets every Tuesday, 401 Alabama #101 (cross street 17th St.), SF, 7pm. Call (415) 552-8648, BBS (415) 552-9070.

Santa Cruz Computer Society. An IBM PC and compatible for beginning to advanced users, programmers and decision makers. Meetings 3rd Thursday, 7 pm, 1555 Soquel Dr., Santa Cruz (Dominican Education Center). Call Daniel Payne, (408) 476-0203.

San Francisco Computer Society, a CP/M and MS-DOS user group, meets on the fourth Tuesday of each month at St. Aidan's Episcopal Church, Diamond Heights Blvd. and Goldmine Drive in San Francisco, 7 pm. Membership is free, meetings are free and open to members and non-members. Member of FOG. For more information call Ralph Gallagher at (415) 929-0252 or Mark Simpson at (415) 479-6290.

IBM Compatible User Group of Silicon Valley. Meets monthly to share information about IBM compatible or clone computers. BBS (408)287-8326, 300/1200, 5:30 pm-7:30 am M-F, 24 hours weekends. Call (408) 287-8325 for information, or write to 1515 The Alameda, Suite 303, San Jose, CA 95126.

CP/MUSC, A FOG affiliate, membership open to all persons interested in MS-DOS or CP/M computers. Meetings the second Tuesday of each month. Wheelchair access. Guest speakers, demonstrations, MS-DOS and CP/M software libraries. Info: P.O. Box 628, Ben Lomond, CA 95005, (408) 338-6365, (408) 476-0504.

KAYPRO

BAKUP (Bay Area Kaypro Users and Programmers). One of largest Kaypro user groups in country. Meet 3rd Tuesday of month, 7:30 pm. We support our RBBS/RCPM for members, publish a monthly newsletter, have a 40 volume software library, and a lot of fellow KP'ers! Write for info, $10 per year to join: Membership Coordinator, P.O. Box 20181, Oakland, CA 94620.

KAYFUN Peninsula Kaypro Users Group meets second Thursday of every month at 7:30 pm in the ground floor social room, 222 Laurel St., San Carlos. Bimonthly newsletter, public domain software library, and publication library. Membership $12 per year. Every third meeting a Free Forum night dedicated to individual help. Contact Larry Welling, 222 Laurel St. #310, San Carlos, CA 94070, (415) 593-9981.

South Bay Kaypro Users Group (SBKUG). Meetings at 10400 Torre Ave., Cupertino. We have an extensive library of public domain software, including over 200 diskettes of the SIG/M library. The floor is open for questions at each meeting, and we welcome new members at all levels of ability. Bring your machine, or at least your diskettes. For meeting night call Chuck Hansen at (408) 257-5244, or write P.O. Box 390088, Mountain View, CA 94039-0088.

HAYPROS. Kaypro User's Group - informal format, dealer supported. Meets at Computer Insights, 40957 Grimmer Blvd., Fremont, CA 94538, 1st Tuesday each month. Contact Ted de Castro, 18841 Vineyard Rd., Castro Valley, CA, (415) 581-8882.

CP/MUSC, A FOG affiliate, membership open to all persons interested in MS-DOS or CP/M computers. Meetings the second Tuesday of each month. Wheelchair access. Guest speakers, demonstrations, MS-DOS and CP/M software libraries. Info: P.O. Box 628, Ben Lomond, CA 95005, (408) 338-6365, (408) 476-0504.

San Francisco Computer Society, a CP/M and MS-DOS user group, meets on the fourth Tuesday of each month at St. Aidan's Episcopal Church, Diamond Heights Blvd. and Goldmine Drive in San Francisco, 7 pm. Membership is free, meetings are free and open to members and non-members. Member of FOG. For more information call Ralph Gallagher at (415) 929-0252 or Mark Simpson at (415) 479-6290.

LEADING EDGE

Bay Area Leading Edge User Group. Interested in starting a Leading Edge User Group? Write to Jim Williams, 26765 Calaroga Ave., Hayward, CA 94545.

MACINTOSH

EBMUG (East Bay Macintosh User's Group) Friendly, informal. Public domain software and computer book library. Information exchange. Speakers. Product discounts. Free admission. Meets at West Berkeley Public Library, 1125 University Ave., Berkeley, CA, third Tuesday of each month at 7:30 pm. Contact Shep Tamler, (415) 621-8808. Mailing address P.O. Box 7816, Berkeley, CA 94707-0816.

Bay Area MacForum New and experienced Macintosh users. 2 monthly meetings: one immediately following San Francisco

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Apple Core meeting at Religious Activities Center, Bldg. 689, in the Presidio, San Francisco, 3rd Saturday of the month; one at Software Center, The Willows Shopping Center in Concord, second Monday of the month, 7 pm - 9 pm. For info: 1515 Sloat Blvd. #2, San Francisco, CA 94132, (415) 566-2342.

Berkeley Macintosh User Group (BMUG). 1442A Walnut St., #153, Berkeley, CA 94709. Free meetings on campus (UCB). General meetings: every Thursday 6 pm, Physical Sciences Lecture Hall. Beginners: 6 pm Tuesdays, 230 Wheeler. Developers: 6 pm Wednesdays, 30 Wheeler. Call the office for this week's topic. Reese Jones, (415) 849-9114. BBS (415) 849-BMUG.

MacNexus. Sacramento's Macintosh User Group. 150 members, but still informal. Extensive public domain collection. Contact Gail McGovern, P.O. Box 163058, Sacramento, CA 95816, (916) 446-2411. Meetings 3rd Thursdays, 6:30 pm, Almond Plaza, 17th & C, Sacramento.

MacProgram Unlimited. Meets monthly. Informal with hands-on testing of different programs. Public domain and standard programs in rental library. Meets Albany YWCA, Kains and Solano, Saturday 9:30 am. Contact William Gong, P.O. Box 7704, Berkeley, CA 94707. (415) 527-1756.

Stanford Macintosh Users Group (SMUG) meets on the first Monday of the month at 7 pm in Kresge Auditorium, Stanford Campus. Meetings include speakers, discussions, answers and sale of library disks and other SMUG items. The Developer's SIG meets every other Thursday in 111 Polya Hall, Stanford campus, at 7:30 pm. The Excel User's Group meets approximately two times a month. Also a Novice SIG meets once a month, providing a support group for new Macintosh users. SMUG also publishes a newsletter and runs a BBOARD system. For further information, call the NEW SMUG hotline at (415) 725-0152, or write to SMUG, P.O. Box 6508, Stanford, CA 94305.

Club Mac of Monterey. Macintosh User Group of Monterey Bay Area. Membership with monthly newsletter $25. Meetings 7 pm, last Wednesday of the month, Santa Catalina School, Monterey. Contact Richard Ware, P.O. Box 222988, Carmel, CA 93922.

Macs Of Marin. Macintosh users of Marin County. Emphasis on education of Mac users. Meetings: Room 104, Science Building, College of Marin, 2nd Thursday of each month, 7:30 pm. Contact Steve Salzman, (415) 459-5707.

maCruzers, a Macintosh user's group, meets every second Wednesday of the month at Louden Nelson Recreation Center in Santa Cruz, 7 pm. For information call (408) 459-1644, or leave mail on The WELL (415-332-6106) for Paul Foraker [sforaker]. Wood Ring BBS (408) 423-7205, 18 hrs/day, several megs of shareware/pd utilities and games; making the effort to have the latest version of important DAs and utilities.

Association of Apple 32 Users. Meetings at GTE in Mountain View, 2nd Saturday of the month. Contact Ken Silverman, P.O. Box 634, Santa Clara, CA 95052, (408) 263-0398.

MICROMATE

East Bay Micro-Mate Users' Group. CP/M (3.0) public domain software available. Meetings at 757 Longridge Rd., Oakland, 1st Thursday of each month. Contact Ed Miler, P.O.B. 402, Moraga, CA, 94556, or call (415) 376-1611 for info.

MIDI

MIDI Applications Group. Meets first Saturdays of the month. Contact John Komlenic, 1411 10th Ave., Oakland, CA 94606, (415) 465-6216.

MINDSET

First Mindset Users Group Monthly meetings and newsletters cover advanced topics in computer graphics, animation, and video production using the Mindset Personal Computer and accessories. Meetings at various Bay Area locations, 3rd Monday of the month, 7 p.m. Contact Tim Negris, 138 Village Ct. #6, Walnut Creek, CA 94596, or call (415) 934-1448.

MORROW

BAMDUA (Bay Area Micro Decision Users Association). Meets on last Tuesday of the month, 7:30 pm. Call (415) 644-2805 for location. Monthly newsletter.

SMUG (Stanford Morrow Users Group). Meets 2nd Wednesday of each month at 7 pm on Stanford Campus, Shultz Auditorium, Health Research and Policy building, Campus and Lomita Drive. Other CP/M users welcome. For further information call Ross E. Voyles, (408) 243-1455.

CP/MUSC, A FOG affiliate, membership open to all persons interested in MS-DOS or CP/M computers. Meetings the second Tuesday of each month. Wheelchair access. Guest speakers, demonstrations, MS-DOS and CP/M software libraries. Info: P.O. Box 628, Ben Lomond, CA 95005, (408) 338-6365, (408) 476-0504.

PETMUG—Petaluma Morrow Users Group. Meets Westamerica Bank, Washington Square, Petaluma, 7:30 pm, 4th Thursday of the month. Contact Frank Nance, president, 293 Circulo Puebla, Rohnert Park, CA, (707) 585-2980.

San Francisco Computer Society, a CP/M and MS-DOS user group, meets on the fourth Tuesday of each month at St. Aidan's Episcopal Church, Diamond Heights Blvd. and Goldmine Drive in San Francisco, 7 pm. Membership is free, meetings are free and open to members and non-members. Member of FOG. For more information call Ralph Gallagher at (415)929-0252 or Mark Simpson at (415)479-6290.

NORTHSTAR

INSUA Largest North Star users group in the world. Members' newsletter and software library. Membership dues $20. Contact George Riddle, P.O. Box 2910, Fairfield, CA 94533.

OSBORNE

East Bay FOG (First Osborne Group) Osborne, Kaypro and Morrow. Meets second Wednesday of the month at B&B Electric, 2832 Ford Street, Oakland. 6 pm workshops, 7:30 pm program. For info contact 5497 Taft Ave., Oakland, CA 94518; phone (415) 272-9099.

SMOG3 Osborne User Group (Peninsula) Meets first and second Monday of every month at Crane Place, 1331 Crane, Menlo Park. Call Phil Moore at (415) 325-2442.

MTDOG (Mt. Diablo Chapter-First Osborne Group) Meetings 7 pm, 3rd Wednesday each month in Diablo Room (top floor), SF Federal Savings and Loan, 1660 Olympic Blvd. (cross-street: California), Walnut Creek. Software library, software / hardware / service demonstrations, sharing problems and solutions. For meeting info contact Larry Sydes, (415) 933-2665.

North Bay First Osborne Group. Meets first Thursday of the month at 7:30 pm, Valley Oaks Apts. Rec. Hall, 2600 Northcoast St., Santa Rosa, CA (off West Steele Lane). Call (707) 546-0145 for more information.

CP/MUSC, A FOG affiliate, membership open to all persons interested in MS-DOS or CP/M computers. Meetings the second Tuesday of each month. Wheelchair access. Guest speakers, demonstrations, MS-DOS and CP/M software libraries. Info: P.O. Box 628, Ben Lomond, CA 95005, (408) 338-6365, (408) 476-0504.

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NEC

Bay Area NEC/100 Users. For NEC 8201A and TRS-80 Model 100. Meets College of Alameda, 1st and 3rd Thursdays, 7:30 pm. Contact Rachel Holmen, c/o Truly Portable, Box 2916, Oakland, CA 94609, (415) 658-1889. Call for room number, which changes occasionally.

PAPERBACK SOFTWARE

V-P Planner Special Interest Group. Meets 2830 Ninth St., Berkeley, CA, every third Thursday, 7:30 pm. Contact Lloyd W. Bracewell, 6200 Harwood Ave., Oakland, CA 94618, (415) 547-8205.

PICK

Northern California Pick Users. NCPU mails a monthly newsletter, meets on the third Tuesday of the month for a dinner meeting with Pick related program, holds Pick educational courses, and has many other member benefits. P.O. Box 884474, San Francisco, CA 94188-4474, (415) 284-4063.

PIED PIPER

Pied Piper Users Group Owners of Pied Piper CP/M based computer are invited to call or attend the PPUG. Meets last Tuesday of the month at 7:30 pm. Please call (415) 638-1146. Meeting address: 10950 Elvessa St., Oakland 94605.

R2E

North Bay R2E Forming user group for R2E System microcomputer users. Please call (415) 235-1598 for information.

RADIO SHACK TRS

TRS-80 Computer Society of Diablo Valley The purpose of this group is the sharing of information, problem solving, support group, purchasing discounts, support for professional, business and educational users of Radio Shack computers. Out-of-area members welcome. Meetings second Tuesdays of the month, Willow Creek Center, 1026 Mohr Lane, Concord, 7:30-9:30 pm. Doors open at 7. Contact Roy or Sue Copeland, P.O. Box 23438, Pleasant Hill, CA 94523, (415) 372-7003.

TRS Nybblers. Since 1979. New MS-DOS SIG, 3rd Fri. ea. mo., Room 1500; CP/M SIG 1st Fri. ea. mo. BBS (415) 582-8442 24 hrs. DSDD disks, boxed, $14.00. Meetings at Chabot College, Hayward, 2nd Friday, 8 pm. Contact B.B. Jarvis, 1975 Paseo Del Cajon, Pleasanton, CA 94566. (415) 582-8442.

Bay Area Chapter of the California Computer Federation, a user group for Color Computer users formed by The Redwood Color Board. Write the R.C.B., P.O. Box 7007, Redwood City, CA 94063 for details.

South Bay TRS 80 Users Group (SBUG). For info write P.O. Box 60116, Sunnyvale, CA 94088 or call Don Rhodes at (408) 996-1008. BBS: (408) 253-6293. Meetings, Cupertino library, 3rd Tues., 7:15 pm.

San Mateo TRS-80 Users Group. Meets 4th Thursday of the month at Cal Fed S&L, 2600 Ocean Ave., SF., 7:30 pm. BBS (415) 574-7684, 300/1200, 8-N-1 settings. Contact Julian Kaufman, (415) 992-1783.

Bay Area NEC/100 Users. For NEC 8201A and TRS-80 Model 100. Meets College of Alameda, 1st and 3rd Thursdays, 7:30 pm. Contact Rachel Holmen, c/o Truly Portable, Box 2916, Oakland, CA 94609, (415) 658-1889. Call for room number, which changes occasionally.

Byte Bandits of America. Meets 2nd Saturdays 1 pm, 4th Wednesday 7 pm, 780 Manx Ave., Campbell, CA. Call Robert W. Brown, (408) 379-2774 for information. BBS: 300/1200. 24 hrs., free, (408) 374-3974.

Club 100. A Model 100 users Group. Dedicated to Model 100, 103, 200, NEC 8201A and Olivetti M10 users. Contact Richard Hanson, club secretary, P.O. Box 23438, Pleasant Hill, CA 94523, or call our club BBS at (415) 939-1246. We are a very active, on-line club with many helpful members, and a large Model 100 public domain library available to members.

REALWORLD

Bay Area REALWORLD Users Group meets the third Tuesday of each month. For more information contact Mitch Paioff, 5097 Tisdale Way, San Jose, CA 95130, (408) 866-4310.

ROYAL

Royal Alphatronic, San Francisco. New group forming. Call Tom Rutkowski at (415) 863-4794 for information or write P.O. Box 421161, San Francisco, CA 94142.

S-100

S-100 Bus Users Group. Meets fourth Tuesdays, 7:30 pm, Community Room, El Paseo de Saratoga, San Jose. Contact Dick Delp, Box 10404, San Jose, CA 95157, (408) 245-2137. CP/M-80, S-100 emphasis. CP/M and MS-DOS libraries.

SANYO

Sanyo User Group of the San Francisco Bay Area meets the second Wednesday of each month at Sears Savings & Loan in the Carlmont Shopping Center (Alameda & Ralston), Belmont, 8-10 pm. National group dedicated to the Sanyo 8 bit CP/M machines: MBC 1000, 1100/1150, 1200/1250 series. For info write SFBASUG, 1260 Westwood St., Redwood City, CA 94061. Include SASE with 39 cents postage for copy of newsletter.

Sanyo MBC 1100-1150 user group now forming in Oakland. Call or write (415) 534-1981, 5885 Bancroft Ave., Oakland 94605 for meeting time and location.

Sanyo National Users Group. SNUG is a central resource for Sanyo information and public domain. Inquiries welcome! Contact John Egan, 101 Irving Ct., Pleasant Hill, (415) 827-3023.

Santa Clara Sanyo Users Group. SCSUG's 24 hour BBS (415) 659-9169. Support for MBC-55X Systems. Meetings at 1 West Campbell Ave., Campbell, 7-10 pm every 3rd Wednesday of the month. Contact Jim Thomas, (415) 651-0201 for info.

Sanyo PC Compatible Club. SPCCC supports Sanyo 16 bit machines and similar PC clones. We publish the Sanyo PC Hackers Newsletter (International), subscription rate $20/yr., and maintain a public domain software library. Meeting at the Mercury Room of Mercury Savings & Loan, 99 El Camino Real, Menlo Park, CA, 7-9 pm the first Wednesday of the month. Contact Victor R. Frank, 12450 Skyline Blvd., Woodside, CA 94602, (415) 851-7031.

SOUTHERN PACIFIC

ICOLATUG. User group for owners of Southern Pacific Ltd's Mountainside ICO and LAT single board computers. Exchange tips and programs. Contact Andrew P. Porter, 774 Joyce St., Livermore, CA 94550.

TEXAS INSTRUMENTS

San Francisco 99ers One General Meeting per month plus uncountable mini-meetings for training. Over 500 programs available in library. Meetings 12 noon, third Saturday of the month, 3751 Elston Way, Oakland. Contact Gary L. Anderson, 24816 Mango St., Hayward, CA 94545, (415) 786-1776.

South Bay T.I. User Group. One general meeting per month. We have training session, library and own bulletin board (408) 578-6264. Meets first Thursday of each month at 7:00 pm, Cupertino Library, 10400 Torre Ave., Cupertino, (between DeAnza Blvd. and Rodriques Ave.) starting at 7 pm in the basement conference room. Call v.p. Keith Felix, (408) 258-6678.

Nor-Cal TI 99/4A Users Group. Learn more about your Texas Instruments 99/4A computer. Free software, sources of hardware and software. Contact Dave Steady, 324 Howard St., Petaluma 94952, (707) 762-6561. Meetings at Retail Clerks' Union Hall, 382 Tesconi Ct., Santa Rosa, CA, first Wednesday of the month at 7 pm.

THEOS OASIS

Theos/Oasis Users Bay Area Group. Greater SF Bay Area users of THEOS and OASIS multi-user operating systems meet quarterly to focus on "hot" issues and share info. Contact Joe Trimble, 236 Frisbie St., Oakland, CA 94611, (415) 839-3281.

TIMEX SINCLAIR

East Bay Timex/Sinclair User Group (EBZUG) Timex/Sinclair user group. S/W library and newsletter. Meets at West Branch of Berkeley Public Library at corner of University and San Pablo. Usually meets 4th Thursday of the month at 7:30 pm. CALL FIRST. Contact Russ English, 415/465-3116 or write to Woody McPheeters at 3120 King St., Berkeley, CA 94703.

Peninsula Timex/Sinclair User Group (PUG) Timex/Sinclair user group. S/W library and newsletter. Meets at Peninsula Hospital, 1783 El Camino, Burlingame. Meets 3rd Sunday of the month at 1 pm. Contact George Mockridge, 311 Michelle Lane, Daly City, CA 94015, (415) 878-1773

Silicon Valley Timex/Sinclair User Group (SVTSUG) Timex/Sinclair user group: 6675 Clifford Drive, Cupertino, CA 95014-4530. Bill Miller (408) 253-3175. SW library and newsletter. Meets at Cupertino Library, 10400 Torre Ave., Cupertino, CA, last Tuesday of the month.

VTC-1050

VTC-1050 User's Group. Establishing a VTC-1050 User's group and newsletter. Interested parties please call or write Ken Phillips, 4349 Blackford Ave. #1, San Jose, CA 95129, (408) 973-1353.

WORD PERFECT

Word Perfect of Santa Cruz. Now a SIG of Santa Cruz Computer Society. Telephone network, meetings occasionally as needed. 2120-87 N. Pacific, Santa Cruz, CA 95960-2743. Contact Sylvia Caras, (408) 426-7636.

South Bay Word Perfect User Group. Call Martin Van Derpool, (408)238-8434 for information.

ZENITH

Zenith User Group of San Francisco. Zenith users are forming a user group and bulletin board for Zenith computers. Hands on demonstrations will be provided on the full line of Zenith hardware. Meetings at 1325 Howard St., SF, CA. Contact Stan Kelley, 415-861-3068.

NBHZUG North Bay Heath/Zenith Users Group. Devoted to Heath/Zenith computers in specific and MS-DOS, CP/M computers in general. Beginners and advanced. Meeting place varies, time 2nd Saturday, noon. Contact Martin Schaaf, (415) 454-6761 for information.

B.A.H.U.G. Heath / Zenith computers, CP/M, MS-DOS (300/1200 baud BBS 415-365-7836). Meetings 2001 Middlefield Rd., Redwood City, CA, 7 pm second Thursday. Contact John Lindquist, 642 Hollenbeck Ave., #1, Sunnyvale, CA 94087.

UNIX

The Unix C-Club Seminars, public domain softwares, information exchange, Unix hardwares and softwares. Discount on purchases. Meets 2nd Saturday of each month at 10 am. Call Gilbert B. Dalit at (415) 348-6723 or (408) 238-5587 for more information, or write: 122 2nd Ave., Suite 214, San Mateo, CA 94401.

VECTOR

Bay Area Vector Group Meeting held regularly. Please call to be put on mailing list. You will be informed of next meeting! Contact Peter Tjeerdsma, 764 Cole St. #4, San Francisco, CA 94117. Phone (415) 681-0308.

VICTOR

Victor* Group is the San Francisco Bay Area Victor User's Group. We have three chapters East Bay, South Bay, and San Francisco. Members can attend meetings at any of the chapters or all of them. The more the merrier. Dues are $30 a year, which includes a subscription to VictorTalk, membership in a Victor-exclusive discount buying cooperative, and the right to buy from our public domain library at a discount. South Bay meetings are held the first Thursday of each month at Computer Insights, 40957 Grimmer Blvd., Fremont at 7:30 pm. Contact John Kimber (415) 797-6423. East Bay meetings are held the second Wednesday of the month at 7:30 pm; contact Boardman Moore (415) 283-3285 for location and further info. San Francisco meetings are held the third Sunday of the month at 5 pm at Homestead Savings, 130 West Portal, San Francisco. Contact Joe Zmuda, (415) 584-4048.

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On Drawer, On Painter, On Blitter, On Pixel

By Newt Pippin

Easy on-screen drawing with the Macintosh is what first attracted many of us to this particular computer, but in retrospect screen drawing may not be quite enough. Even though the Macintosh display is amazingly clear and crisp compared to other types of personal computers, the reality is that, for many applications where the end result is hard copy, we want more resolution than any video screen can provide.

On screen, the Macintosh shows 72 dots per inch, or a few hundred dots each way for the total screen width and height. By contrast, most laser printers, including Apple's own LaserWriter, get 300 dots in each inch. A decent plotter or film recorder might offer resolution ten times better.

Paint-type programs, including *MacPaint* and *FullPaint*, however, are limited to exactly the resolution of the screen. That's because they use the display not only as their output medium, but as the storage for the image being created. A paint program doesn't record your intentions with any more precision than 72 dpi, so at output time it can't make very good use of anything significantly better.

Paint programs also are limited in what they can do with text. Once you've created a block of text and have signalled you want to move on, a paint program converts the text to on-screen dots, again limited to the resolution of the screen. That means that output from *MacPaint* doesn't make use of the high resolution fonts that text applications can call upon (although the LaserWriter does do some smoothing of jagged edges if you request that mode).

THE OBJECT OF IT ALL

There are, of course, object-oriented drawing programs (such as *MacDraw* and *MacDraft*) that can match their output resolution to the capabilities of higher resolution devices. Because they save objects as descriptions of the drawing process rather than the resulting dots, they can tell an output device what the idealized shape should be and let the output device come as close as possible to that description.

Some text-oriented packages also have some limited drawing capability. Programs such as Microsoft *Works* let you create some simple boxes and line constructions right in your document, and you can combine text and *MacPaint*-style documents for printing.

Newt Pippin started out with a 128K Macintosh when Apple first introduced the product and has worked his way up to a Macintosh Plus hooked up to a LaserWriter. He works for a communications company in the San Jose, CA area.

> **If both paint and draw approaches have their own unique advantages, one obvious answer would be to combine them. And that's exactly what several firms are now doing.**

Unfortunately, it's hard to keep that same ease of use and flexibility with a word processor or object-oriented drawing program. The Mac can't read our minds, so we have to tell it explicitly what we want done —all in a very stylized and formal way. That's fine for drawing squares, but it's a rough way to do a sketch.

PUTTING IT TOGETHER

If both paint and draw approaches have their own unique advantages, one obvious answer would be to combine them. And, in fact, that's exactly what several firms are now doing.

The first package I noticed that made a conscious attempt to bridge the gap was *GraphicWorks* from Mindscape (apparently a more dignified version of their earlier *ComicWorks*). In *GraphicWorks*, you draw in Paint fashion on Easels, then add your text in Balloons. Normally, the balloons stay separate, letting you get revisable, high quality text along with the pixel-oriented graphics.

Another program that combines modes is *SuperPaint*, from Silicon Beach Software. This drawing program uses a double-layer approach, letting you electronically overlay paint and object-oriented images. You get not only quality text and easy sketching, but you get to choose the set of tools and approach that works best for each item in your creation.

In theory, either of these approaches should solve most of the problem (at least for LaserWriter output), and they are both very worthwhile packages. In practice, it turns out that there are a few limitations on putting the two modes together in one document.

According to the authors of *GraphicWorks*, the biggest problem with the combined approach is speed. As you may have noticed already, the LaserWriter (or any other PostScript-based printer without scads of memory) is very slow at producing compound documents. "A complex page containing many bitmapped images in conjunction with text balloons could easily take one-half hour to print," the manual warns with what my experience says is good reason.

Another possible problem is the indivisibility of 300 by 72. Objects designed for 72 dots per inch are about 4% off at 300 dots per inch, often enough to throw off the alignment of the paint layer with the draw objects (the draw objects keep their proper size when scaled).

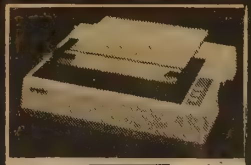
Lastly, there are apparently some peculiarities about the way Apple has implemented the QuickDraw graphics routines inside the Mac and the PostScript driver that most applications use to translate from QuickDraw to PostScript form. In *GraphicWorks*, for example, you can't have other than rectangular paint regions if you also use object-oriented text, and you can only combine the two layers by addition, not by other rules such as "exclusive or."

The solution that *GraphicWorks* recommends is to convert objects and text into the paint image (in effect, rasterizing the object display list, for those who speak techie). That guarantees that what you get is what you see, and speeds output somewhat (the bit maps are still relatively slow, but there isn't the constant delay of loading and initializing fonts). You don't get laser-quality text and objects, but everything does fit.

In *SuperPaint*, Silicon Beach simply warns you that printing takes a while. The paint portion of the program only lets you define rectangular regions to work in, so that takes care of the main QuickDraw problem. And a feature called "LaserBits" allows you to define small regions which you work with in magnifed form on screen, but are saved at 300 dots per inch for accurate printout (you can't do your whole drawing at 300 dpi because there isn't enough available memory).

Both these approaches work well enough for illustrations, manuals and everyday business correspondence. You quickly learn to allow for some text versus image misalignment, or to pick which areas are worth the time and memory to edit in the full 300 dot per inch form.

A full solution for perfectly combining paint and draw approaches isn't immediately available, and there isn't likely to be one soon. Printing technology will probably provide higher resolutions than video screens for the foreseeable future, and too many applications use QuickDraw to change its peculiarities. So short of a breakthrough in screen designs, we'll have to just settle for some partial solutions —solutions, we might note, that are still far ahead of what anybody is offering on those less graphical personal computers. ☐



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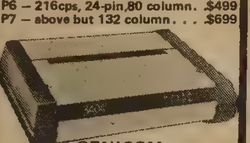

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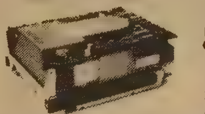

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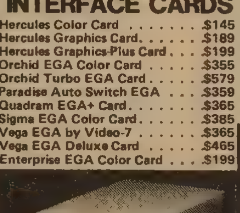

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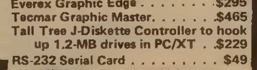

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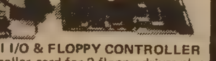

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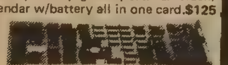

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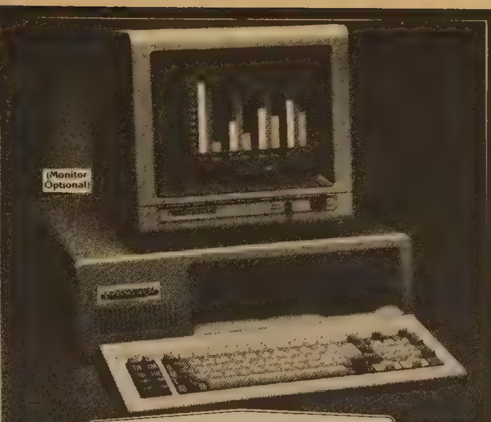

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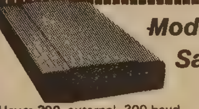

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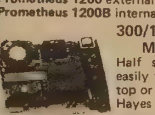

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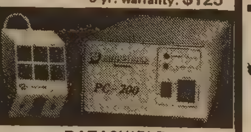

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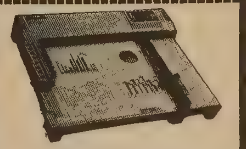

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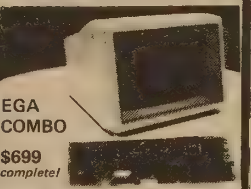

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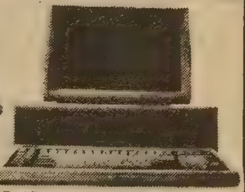
	256K, Two 360K drives, 20-MB hard disk.	$1,495
	256K, Two 360K drives, 30-MB hard disk.	$1,595
XT	256K, One 360K drive, keyboard	$1,625
	256K, Two 360K drives, keyboard	$1,769
	256K, Two 360K drives, 20-MB hard disk	$2,149
	256K, Two 360K drives, 30-MB hard disk.	$2,295
AT	256K, One 1.2-MB drive, keyboard. (68)	$2,550
	512K, 1.2-MB drive, 20-MB hard disk	$3,325
	512K, 1.2-MB drive, 30-MB hard disk (339)	$4,175

COMPAQ

Portable – 256K, 2 drives	$1,575
Portable II, 256K 1 Drive	$2,525
Portable II, 256K 2 Drives	$2,650
Portable II, 640K, 1 dr. 20-MB	$3,550
Despro 128K, 1 drive.	$1,565
DeskPro w/256K, 2 drives	$1,735
DeskPro w/640K, 1 drive, a 20-MB hard disk, a 10-MB tape backup.	$2,495
DeskPro-286, 256K, 1.2-MB dr.	$2,895



DeskPro-286, 512K, 1.2-MB drive, 30-MB harddisk	$3,595
DeskPro-286, 512K, 1.2-MB drive, 30-MB harddisk, 10-MB tape	$4,095
Despro 386, 1.2 & 40-MB Dr	$4,950
Despro 386, 1.2 & 70-MB Dr.	$5,895
Despro 386, 1.2 & 130-MB Dr.	$7,695

AT&T 6300 COMPUTER

640K memory, 1 floppy drive, serial & parallel ports, clock, Monochrome and RGB color ports, keyboard	$1,450
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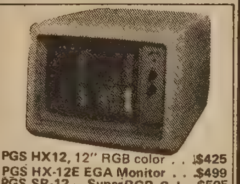
640K memory, 1 floppy drive, 20-MB hard disk, serial, parallel ports, clock, mono & RGB ports, keyboard.	$1,875
AT&T Green Monitor	$225
D.O.S.	$65

TOSHIBA LAP-TOP

T1100-PLUS – Two 720K drives, LCD screen, battery operated	$1,650
T3100 – One 720K drive, 10-MB hard disk, 640K, amber plasma screen. It is a lap-top AT. 115 volt AC	$3,299
Toshiba 5¼" external drive for 1100+ and 3100 only.	$445
Toshiba 3½" internal drive for PC	$199
Toshiba Modem 1200B for lap-tp	$385

MONITOR SALE



PGS HX12, 12" RGB color	$425
PGS HX-12E EGA Monitor	$499
PGS SR-12 – Super RGB Color	$595
PGS SR-12P Color Monitor	$695

★★★★ RGB COLOR ★★★★

IBM RGB Color Monitor.	$545
IBM Enhanced RGB Monitor	$689
NEC Multi-sync RGB monitor	$599
Quimax PX-IV – 13" RGB, 720x240 line. Has green switch, tilt & swivel base	$445
SONY KV-1311CR – RGB Color Monitor, 680-line resolution, also a Trinitron Color TV with remote control . . . *A Fantastic Buy*	$495
SONY SPD1302, 13" EGA Multisyn monitor w/900-line resolution	$625
Mitsubishi XC-1410C, 14" EGA Color. Similar to Compaq EGA	$485
Taxan 720 RGB Monitor.	$379
Taxan 635 RGB Monitor.	$449
Taxan 650 RGB Monitor.	$515
Taxan 760 EGA Monitor.	$525
Thompson 14" RGB Color monitor w/ green & amber switch.	$325

★★★ GREEN SCREEN ★★★

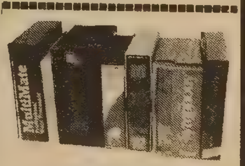
IBM Monochrome, 12", 720-dot	$255
Quimax DM-14G – 13" green TTL, 750x350 resolution, titlt & swivel base included. 1 yr. warranty	$155
Samsung SF39A7, 12" flat screen TTL Green monitor w/swivel base	$105
Taxan 115, 12" green composite	$125
Taxan 121, 12" green, 1000x360 dots, TTL monochrome	$145

★★★ AMBER SCREEN ★★★

Amdek 300A, 12" amber	$149
Amdek 310A, 12" amber	$169
Princeton MAX-12, 12" amber.	$169
Quimax DM-14A – 13" amber TTL, 750x350 resolution. Tilt & swivel base included. 1 yr warranty.	$159
Samsung SM12SFLAA7, 12" flat screen TTL Amber monitor w/base.	$109
Taxan 116. 12" amber composite	$129
Taxan 122, 12" amber, 1000x360 dots, TTL monochrome	$149

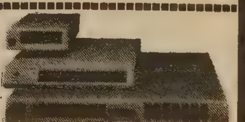
★★★ BLACK & WHITE ★★★

Roland MB-142, 14" reversible black & white TTL monochrome monitor w/ super hi res. 720x350 dots.	$269



SOFTWARE

Lotus 1-2-3 Ver. 2.	$280
Lotus 1-2-3 Ver. 2.01 5¼" Disk	$319
SYMPHONY	$439
WORDSTAR PROPAK	$279
WORDSTAR 2000+	$299
dBASE III-Plus	$445
XTREE	$45
MULTIMATE	$239
WORD PERFECT	$199
SIDE KICK	$49
MS DOS 3.2 w/GW Basic.	$85



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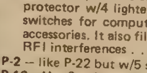
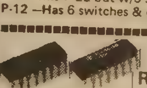
P-2 – like P-22 but w/5 switches	$109
P-12 –Has 6 switches & clock	$149



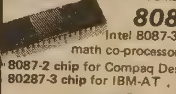
DYNAMIC RAM CHIPS

64K (4164) 150 ns	$1.50 ea.	9 for $10
128K for IBM-AT, 200 ns		9 for $54
256K (41256) 150 or 200 ns		9 for $45



8087 CHIP

Intel 8087-3 high speed math co-processor	$135
8087-2 chip for Compaq DeskPro	$175
80287-3 chip for IBM-AT	$215



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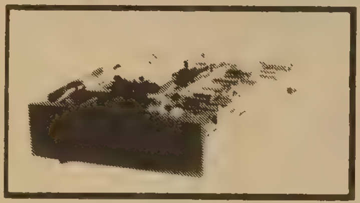
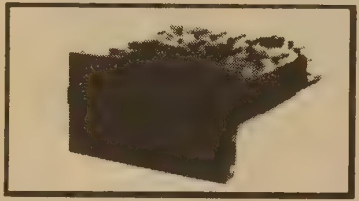


40 Track	$79 ea
80 Track	$89 ea

For IBM-XT

Floppy Drive Full High



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96TPI

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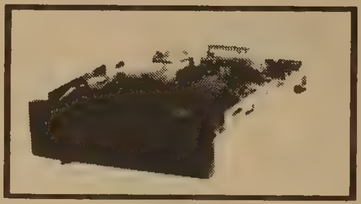

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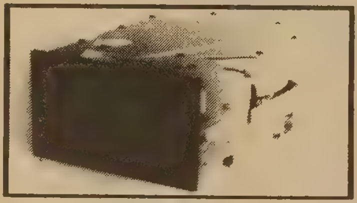
For IBM-AT and Compatibles

Hard Drive Specials



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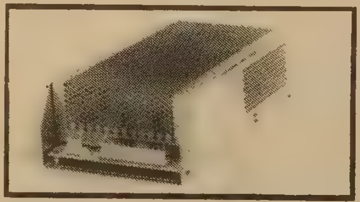
Includes: Controller, Cables, Software, Manual & Mounting Hardware

ASTEC 65 Watt Switcher



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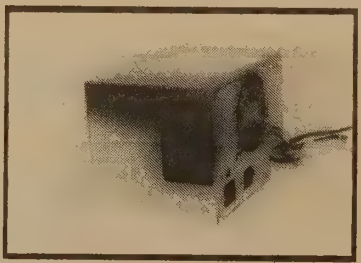
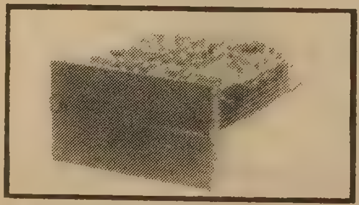


For IBM-AT and Compatibles

$129 ea

+ 5V - 7.0 - 20 AMPS
+ 12V - 2.5 - 7.3 AMPS
- 12V - 0 - 0.3 AMPS
- 5V - 0 - 0.3 AMPS

Double your Disk Drive Capacity



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For IBM-XT and Compatibles

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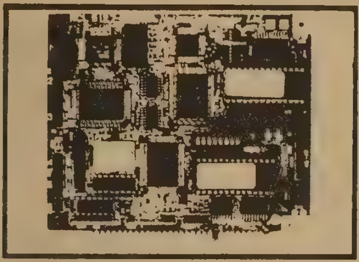
+ 12V - 0.4 - 7 AMPS
- 12V - 0 - 0.25 AMPS
- 5V - 0 - 0.3 AMPS

PERIPHERAL SALE

NCL 5127 Winchester Disk Controller For the IBM PC/XT and Compatibles



$109 ea

The NCL 5127 allows the user various options and applications from desk tops to portables. It's compact size is achieved through CMOS surface mount technology without sacrificing performance or quality.

*Add $6 for Set of Cables

- ST 506/412 Interface
- Drive Power Connector
- Switch Selectable Drive Types
- 625Kbyte Data Rate
- Operates With PC-DOS and MS-DOS
- Compact Size (3.9"x4.7")
- Automatic Surface Scan During Format
- Partition Option for High Capacity Drives
- Supports up to 16 Heads and 1024 Cylinders
- Programmable Interleave

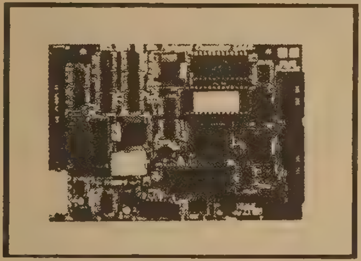
NCL 5125 Winchester/Floppy Disk Controller For the IBM AT and Compatibles

$199 ea

The NCL 5125 is a compact Winchester/Floppy combination controller retaining the "XT" height utilizing surface mount technology.

- Compact Size (3.9"x8")
- ST 506/412 Interface
- Controls Up to 2 Winchesters
- Supports Concurrent
- 32 Bit ECC
- Supports 1.2 Mbyte and 360 Floppy Drives
- 2 Mbyte Data Transfer
- Supports up to 16 Heads and 2048 Cylinders
- Overlapped Seeks

NCL 3011 SASI/3016 SCSI Winchester Disk Controller SASI/SCSI Interface Compatibles



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NCL offers you the choice of either SASI or SCSI interface capabilities by utilizing full scale IC integration in a compact 3.5" form factor board.

NCL 3011 SASI
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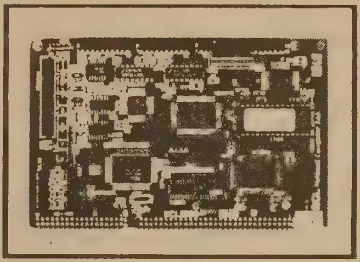
- 1 Mbyte/sec Transfer
- One to One Interleave
- Supports up to 16 Heads

NCL 3016 SCSI
- Compact Size (4"x5.75")
- 1.5 Mbyte/sec Transfer
- Disconnect/Reconnect and Arbitration
- Intelligent Bus (Multiple Hosts)

NCL 5126 Winchester Disk Controller For the IBM AT and Compatibles



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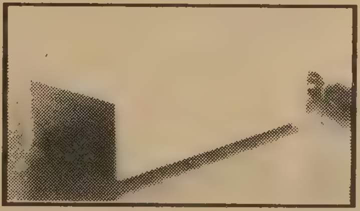
The NCL 5126 is designed exclusively for Winchester only allowing the floppy chip to reside on the main CPU board.

- Compact Size (3.9"x6")
- 2 Mbyte Data Transfer
- Controls Up to 2 Winchesters
- Supports Concurrent Data Operations
- 32 Bit ECC
- ST 506/412 Interface
- 16 Bit Data Transfer
- Supports up to 16 Heads and 2048 Cylinders
- Programmable Disk Parameters
- Overlapped Seeks

External Hard Disk Case with Power Supply



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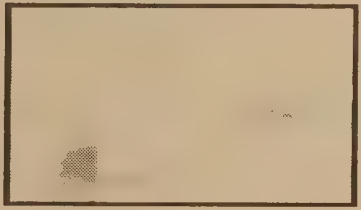

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SOFTSTRIP SOLUTIONS

Temporary Backup Files

By Wayne A. Yacco

This month's entry is an answer to the detritus created by all those application programs that insist on creating a backup version of the files they modify. Not that those files aren't sometimes useful, but most of the time they just take up space.

The ideal might be to create the backup temporarily and then delete it upon verifying successful completion of the task at hand. Some users would probably prefer this option to simply being able to switch off the creation of backup files altogether. For those files with an extension of **BAK, DELBAK** could be the answer.

JOB FUNCTIONS

The job begins by displaying the files to be deleted. This allows the user to detect any files which should be retained. When using this batch job, it is convenient to adopt the convention of renaming those files which should be preserved from the **BAK** extension to another such as **SAV.**

If the directory contains no files with the **BAK** extension, then control transfers to the end of the file and processing ends. All job references to **BAK** should be changed to the appropriate extension for programs which use a different naming convention for their backup files.

A message is displayed advising the user of the response required to delete the files and a **PAUSE** is executed. Normally, a pause causes the command processor to wait for one of two responses and then takes action accordingly. If the response is a **CTRL BREAK**, then processing ends. Any other response elicits a continuation of processing. This job modifies this sequence of events to create an improved user interface.

When the **PAUSE** is executed, rather than wait for keyboard response, **DELBAK** takes advantage of the way DOS reacts to a **CTRL BREAK** and issues one immediately. This causes DOS to issue a termination inquiry that can be answered with a "**y**" or "**n**." The query is not case sensitive, and any other response is ignored.

Wayne Yacco is an independent data-processing consultant with a practice in the San Fernando Valley. Since 1980, he has assisted clients in the implementation of microcomputer-based systems. Questions may be sent to him at P.O. Box 4239, Burbank, CA.

DELBAK.BAT

There are two main advantages to this method. First, an accidental keystroke is less likely to cause undesired processing to continue. Second, the user does not require special knowledge of the **CTRL BREAK** required by **PAUSE** to effect a termination. There is also a third advantage. Due to DOS's redundancy, the user would still have to enter the "**y**" or "**n**" after using the obscure **CTRL BREAK**, so an awkward compound keystroke is saved.

Issuing a **CTRL BREAK** from within the batch job itself requires redirection of input to the **PAUSE** command. The redirected file, **BRK,** is not printed in this text because it contains only one break character and that character is unprintable. Cauzin users can read this file from the softstrip, but other users will have to create it using **EDLIN** or their word processor.

In **EDLIN**, enter the insert mode; enter **CTRL V C**. The "**C**" must be uppercase. Although **EDLIN** offers the easiest way to create this file, some users harbor an unreasonable dislike for it. Those users will insist on using a word processor. Microsoft *Word* users can create this file in the unformatted mode using the ALT key to enter ASCII character 3 from the numeric pad. *WordStar* allows this character to be entered as **CTRL P C** (**^P C**) with the resulting character appearing as **^C**. Use the non-document mode for *WordStar*.

The actual delete is performed with a mask which allows a dummy parameter to be used to exclude all but a limited number of files. This mask may cause side effects, since it includes an asterisk. However, the same mask is used in the earlier directory listing, which reduces the likelihood that files will accidentally be destroyed. If the intent is to delete only selected files, then the asterisk should probably be removed. On the other hand, if the intent usually is to delete all **BAK** files, then the dummy parameter merely adds a certain amount of control. Make any changes to both the **DEL** and **DIR** commands.

IMPLEMENTATION NOTES

The **BRK** file must reside on the active path or in the same directory with delbak. Otherwise, the path must be specified in **DELBAK**. The example assumes that **BRK** resides in a directory named **/ BAT**.

```
echo off
goto :enddoc   D E L B A K

rem
rem     * * * * * * * * * * * * * * * * * * * * * * * * *
rem     * * * * * * * * * * * * * * * * * * * * * * * * *
rem     * *                                           * *
rem     * * © Copyright Wayne A. Yacco 1986. * *
rem     * *                                           * *
rem     * * * * * * * * * * * * * * * * * * * * * * * * *
rem     * * * * * * * * * * * * * * * * * * * * * * * * *
rem
rem  * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
rem   This job deletes any backup files (.bak)
rem   in the current directory. A control break
rem   (^C) entered at the pause terminates the
rem   job without deletion. A directory, other
rem   than current, and/or file, other than *,
rem   may be specified in a parameter (%1).
rem   The backslash (/) must be included even
rem   if a filename is omitted. E.g.:
rem
rem   = = = = =}}     delbak path / filename
rem
rem   Note that the file extension must not be
rem   specified. If a filename is specified, an
rem   asterisk will be appended to it. All
rem   filenames with the .BAK extension and
rem   the same set of leading characters as
rem   the specification will be selected.
rem  * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
rem

:enddoc


  dir %1*.bak
  if not exist %1*.bak goto :end__of__file
  echo.
  echo      Enter N to delete file(s).
  echo.


rem
rem  * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
rem  * * The next statement must specify       * *
rem  * * the path to the BRK file.                * *
rem  * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
rem


  pause < c: / bat / BRK
  del %1*.bak

:end__of__file
```

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A continuing fictional story

CUPERTINO

of the computer industry and the people within it.

By Steve Rosenthal

"That's not a bad lap for a sit-down engineer," Tina White shouted as Jan Fanning sprinted for the last half lap of his two-mile run. It was the first time Tina had seen Jay since their one date before COMDEX. Jay gave her a quick wave, then put his head down for a last push up the straightaway. Finishing his sprint at the midpoint of the far side, Jay dropped back to a slow walk, and Tina joined him as he came around the curve.

"I hear this is the third time this week you've been out here early, Jay. Did things go so well at COMDEX that you people don't have to work hard anymore?" Tina's manner was easy, but she wondered whether Jay was as interested as he had been earlier in the winter. He obviously had some free time, but hadn't given her a call.

"Oh, we're still working hard enough. But we've got a lot more meetings these days, and sometimes I need a chance to run out the tension."

"Problems in your little group there?"

"Oh, you know, nothing worse than usual..." Jay kicked at a clod of dirt, then walked for a moment in silence. "You know, though," he brightened, "in some ways it's better. And I guess we aren't working as hard, because we're knocking off Saturday at noon. You interested in dinner Saturday?"

"Sure, are you treating?"

"If it's someplace reasonable. We didn't do *that* well at COMDEX." They both laughed.

"Say I come by and pick you up about seven?"

"Right. I still have to get a mile in today, so see you then." Tina began her pre-run stretches, and Jay picked up his towel and headed across the strip of lawn to his Volkswagen.

The flashing yellow warning lights on the automated parts delivery carts were as close to morning sunlight as you were likely to see inside Ample Computer's main assembly buildings. As with most of the other computer firms that had kept some production here instead of sending it all overseas, the main floor of the increasingly-automated factory looked like one big windowless interlocked machine rather than the California-style brick and glass palaces that housed the engineering and executive departments.

Steve Rosenthal is a writer, editor and television producer who spent years preparing to write fiction by driving a cab, hitching coast to coast, falling in and out of love, and lately working in the computer industry.

Still, although no sunlight penetrated, it was obviously early in the day, and the first shift was still working at a good clip. It was that midmorning hour when most of the crew had finally shaken off the vestiges of sleep, but tiredness was still a ways away.

"Everyone making chips is so hot on the Japanese quota deal, but it looks like it's the pits for us," Ann Sprague was telling Tina as they assembled still another run of circuit boards.

"You mean because chips are going to cost more?"

"Yeah, but only here. Instead of driving up prices, it's going to drive assembly jobs right over to some other country, that's what it's going to do."

"Whaddya mean?"

"There's no quota on assembled boards, and the tax is a lot less, too. So what is a company like Ample going to do? Ample's not going to pay us to stuff two dollar chips when they could pay someone less money to put cheaper chips in boards somewhere else."

"But what happens to the finished boards?" Tina asked.

"They go into all sorts of things, or they bring them in for final assembly here. Nobody cares. When's the last time you looked inside your TV or one of those computers to see where the boards came from?"

"I don't. You mean that Intel and National and TI and AMD get saved, but we get the shaft?"

"That's the way it looks. I don't know much about this new unit they're just starting, but they must want something special out of us to be making it here."

They worked for a while in silence, pulling boards out of tubs, adding the irregularly-shaped parts the machines couldn't handle, and then sending the completed work out to the soldering station.

"You see the new screens on the next batch?" Ann asked suddenly. "They're flat—no display tubes at all."

"Hand mounting or machine?" Tina asked.

"Hand. It's light, though, and it snaps down in place. Maybe four screws in the corners."

"Is it a long run?"

"I don't know. The rumor is that the company's going all flat screen. Everyone else will eventually, but Ample wants to be first."

"No more CRTs?"

"If it all works out, they say at least not for us. Assembly 2 stays with tubes for a while. So will everybody else in the valley. But in five years, everyone will be on flat screens except those monsters they use in some of those big CAD systems. You ever see those lines?" She looked up at Tina, not really expecting a direct answer. "Lifts and hoists just for the tubes, and every couple of years one goes boom and anybody who isn't wearing their safety stuff gets cut up bad."

"Safety people probably rush over to tell them it serves them right." Tina didn't really object to the safety engineers, but it seemed most of them treated the matter of whether you wore safety glasses as a question of morality rather than a precautionary measure. It was hard enough to see all the small parts they had to line up without any added glass layers. Why couldn't they just make the machines safer and leave the people alone? she thought.

"About those screens," she turned to Ann again. "Japanese, Taiwan?"

"I heard Japanese," Ann said. "It's the kind of stuff they make well. Hey, didn't that guy Jay you dated that time, didn't his company make flat screens?"

"I think so. But he never talks much about work."

"Well, maybe he can get his screens in here. I've got nothing against the Japanese, but I'd rather keep those jobs here in the valley."

"I'll ask him, but he probably won't say anything." ☐

(to be continued next month)

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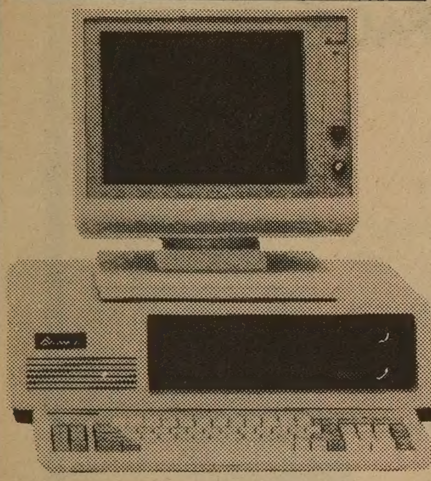

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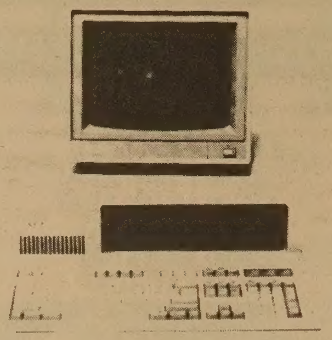

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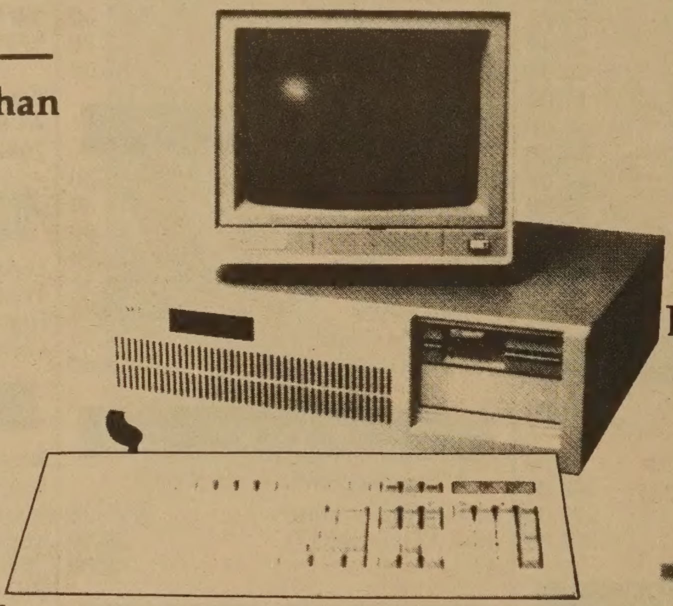

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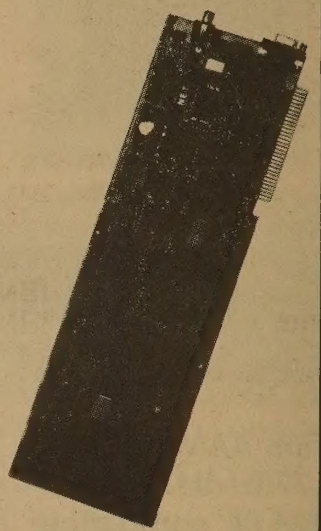

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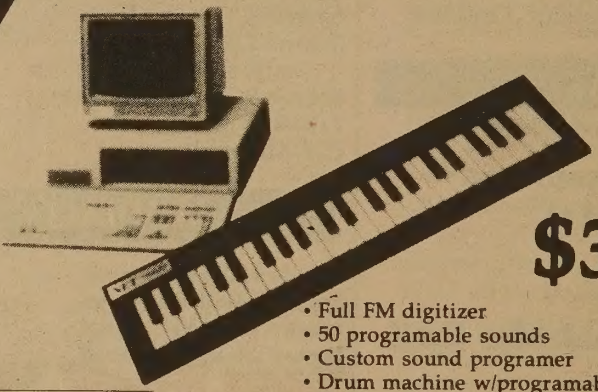

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